United States Patent [19]

Ruger

[11] **Patent Number: 4,771,562**

[45] **Date of Patent: * Sep. 20, 1988**

[54] **GRIPS FOR HANDGUNS**

[75] Inventor: **William B. Ruger**, Croydon, N.H.

[73] Assignee: **Sturm, Ruger & Company, Inc.**, Southport, Conn.

[*] Notice: The portion of the term of this patent subsequent to Dec. 2, 2003 has been disclaimed.

[21] Appl. No.: **937,464**

[22] Filed: **Dec. 2, 1986**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 716,920, Mar. 28, 1985, Pat. No. 4,625,445.

[51] **Int. Cl.**[4] **F41C 23/00**

[52] **U.S. Cl.** **42/71.02**

[58] **Field of Search** 42/71.01, 71.02, 74

[56] **References Cited**

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Primary Examiner—Ted L. Parr

Attorney, Agent, or Firm—Pennie & Edmonds

[57] **ABSTRACT**

A handgun handle construction including a handle frame, elastomer grip element portions positioned on the sides, including as desired on the front and back sides, of the handle frame. The elastomer grip element portions have recesses to each receive a non-deformable insert element. Fasteners hold the frame, grip element portions and inserts together.

6 Claims, 19 Drawing Sheets

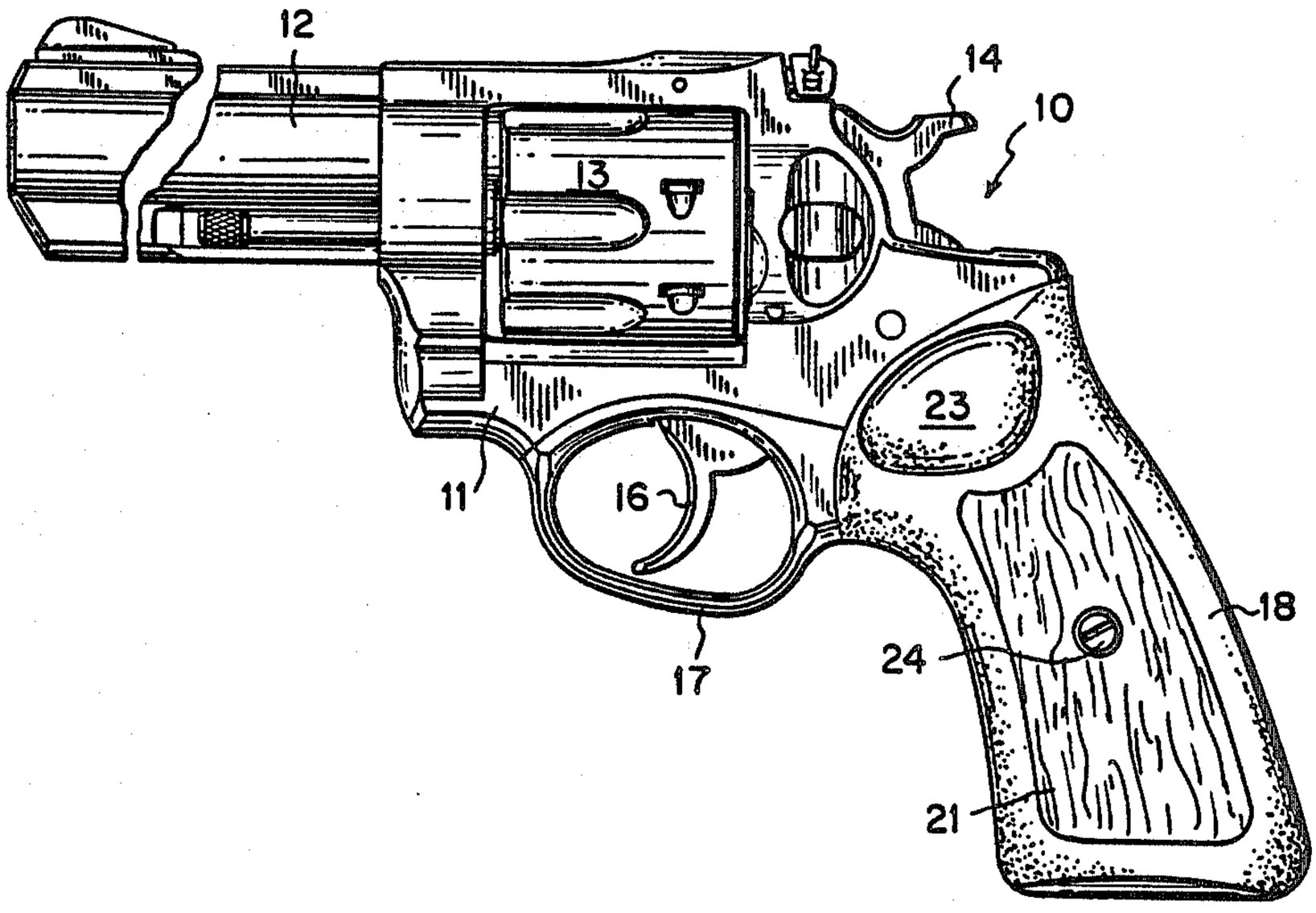


FIG. 1

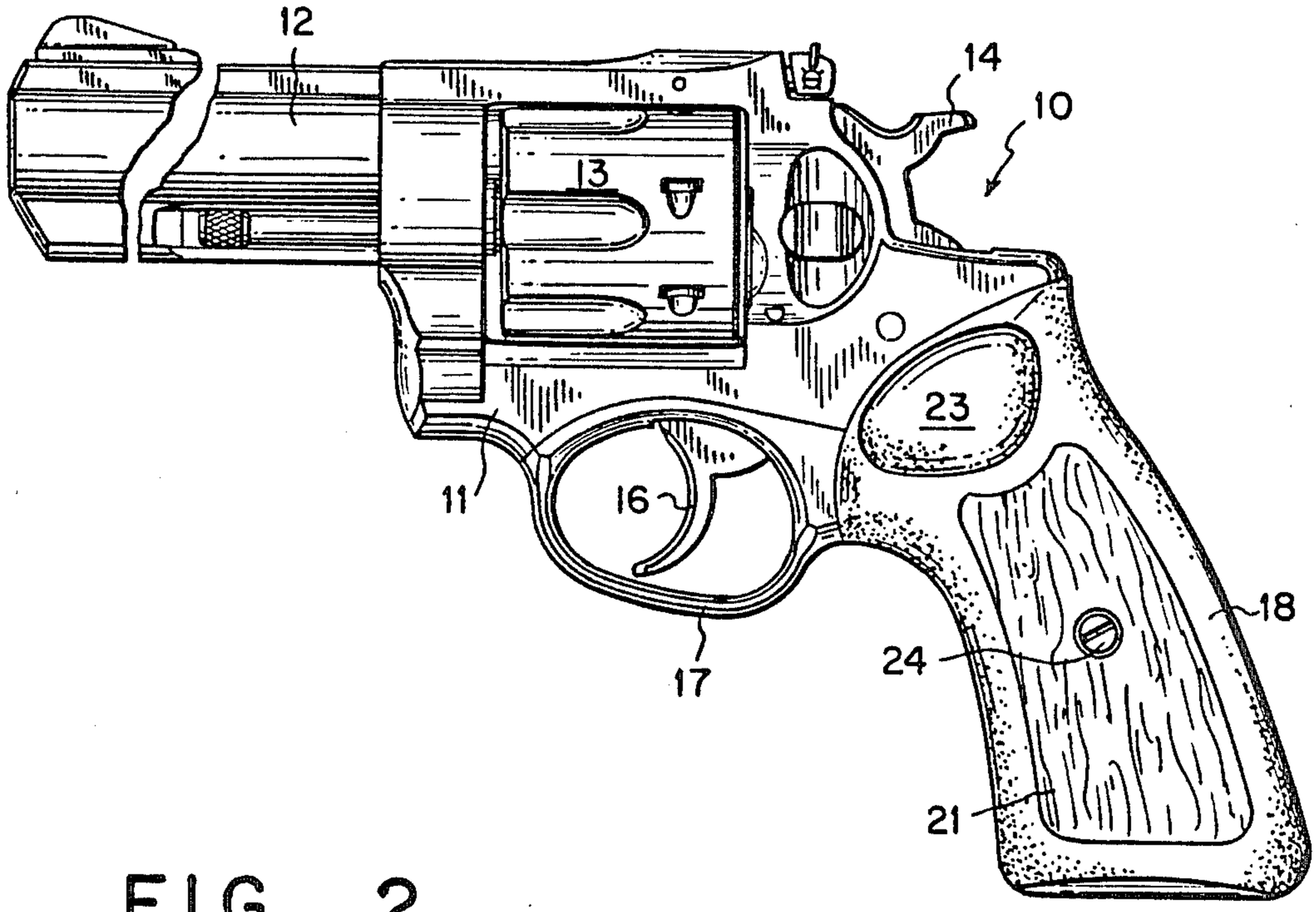


FIG. 2

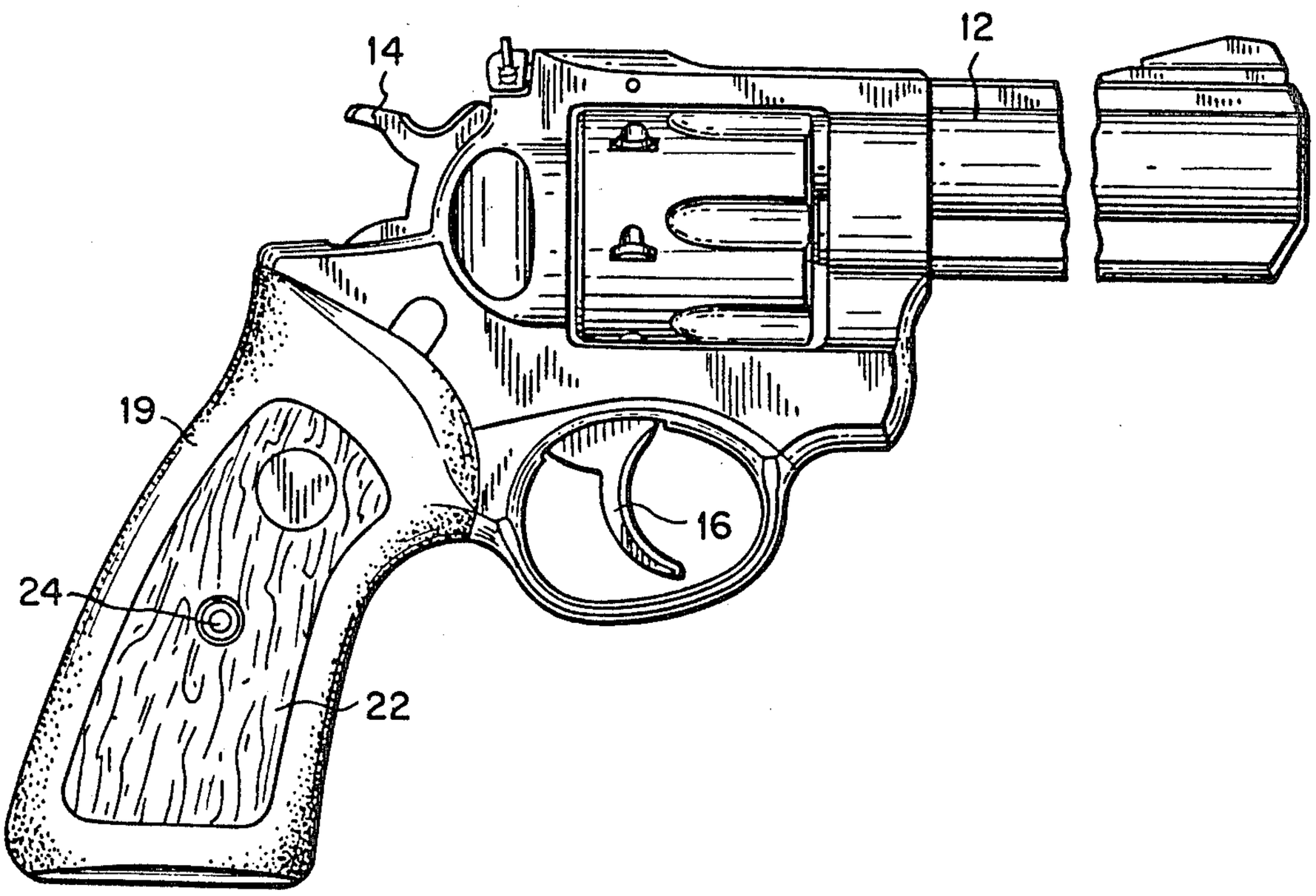


FIG. 3

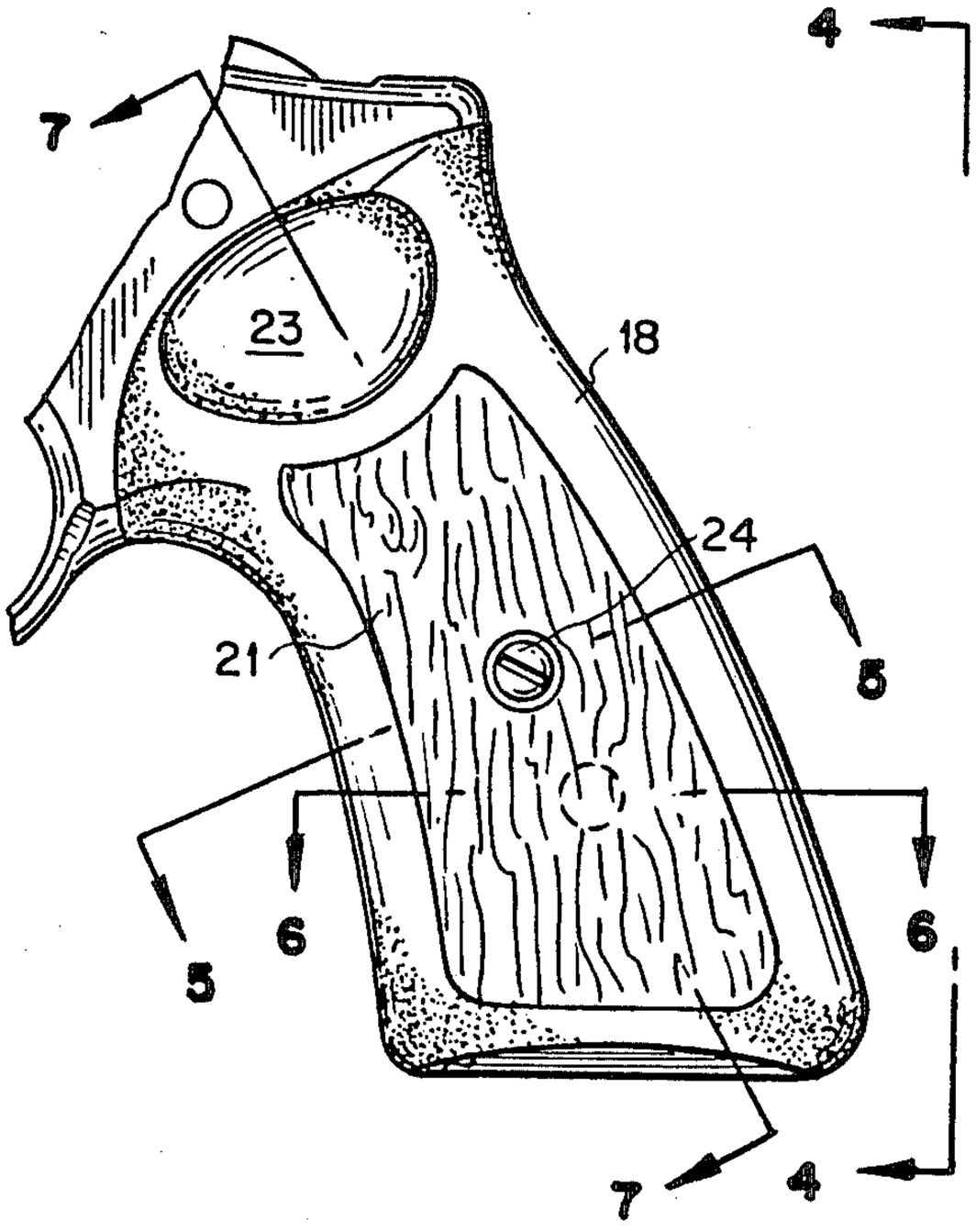


FIG. 4

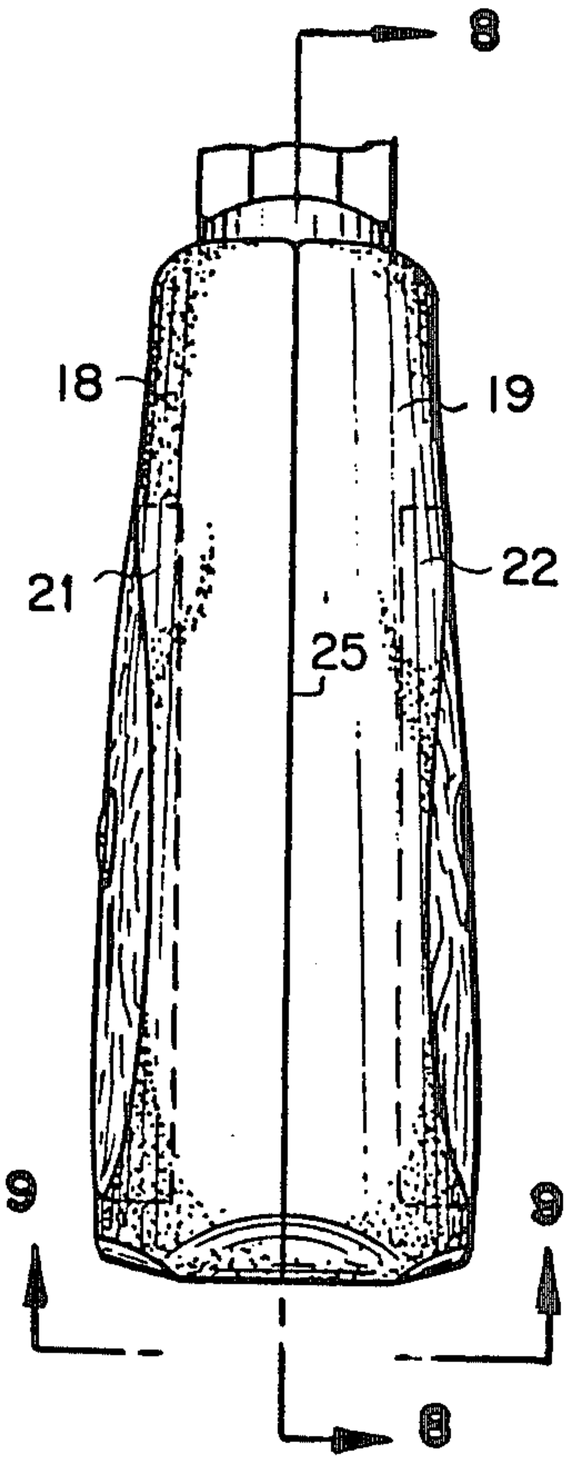
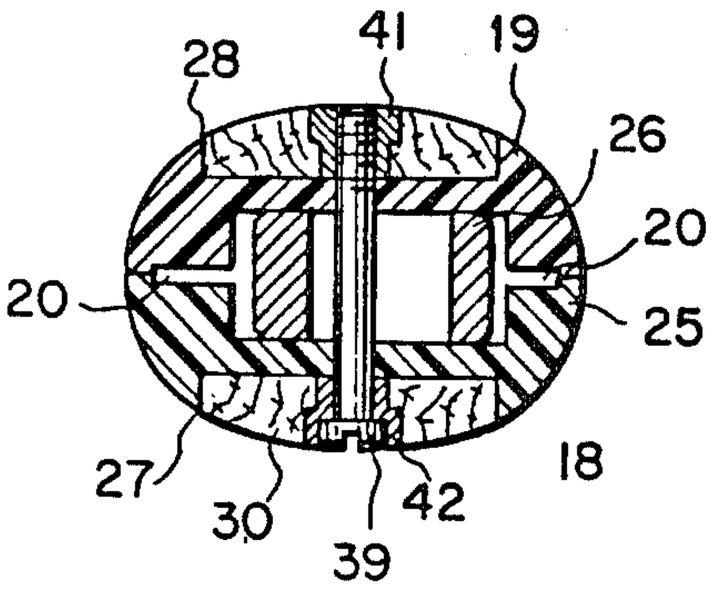


FIG. 5



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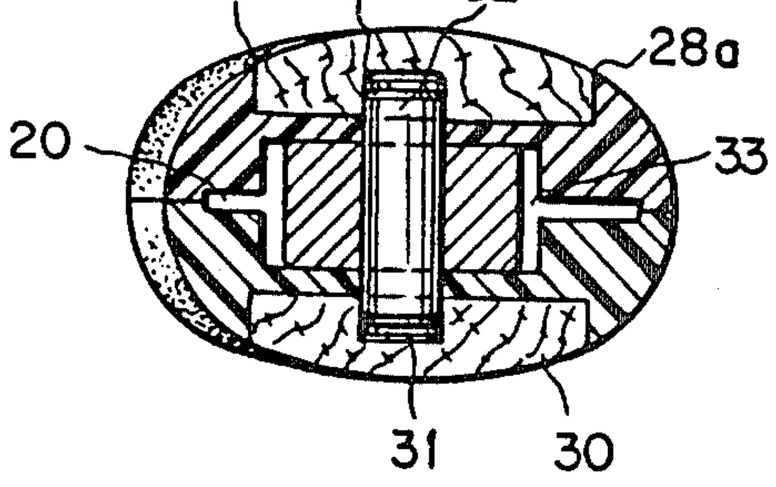

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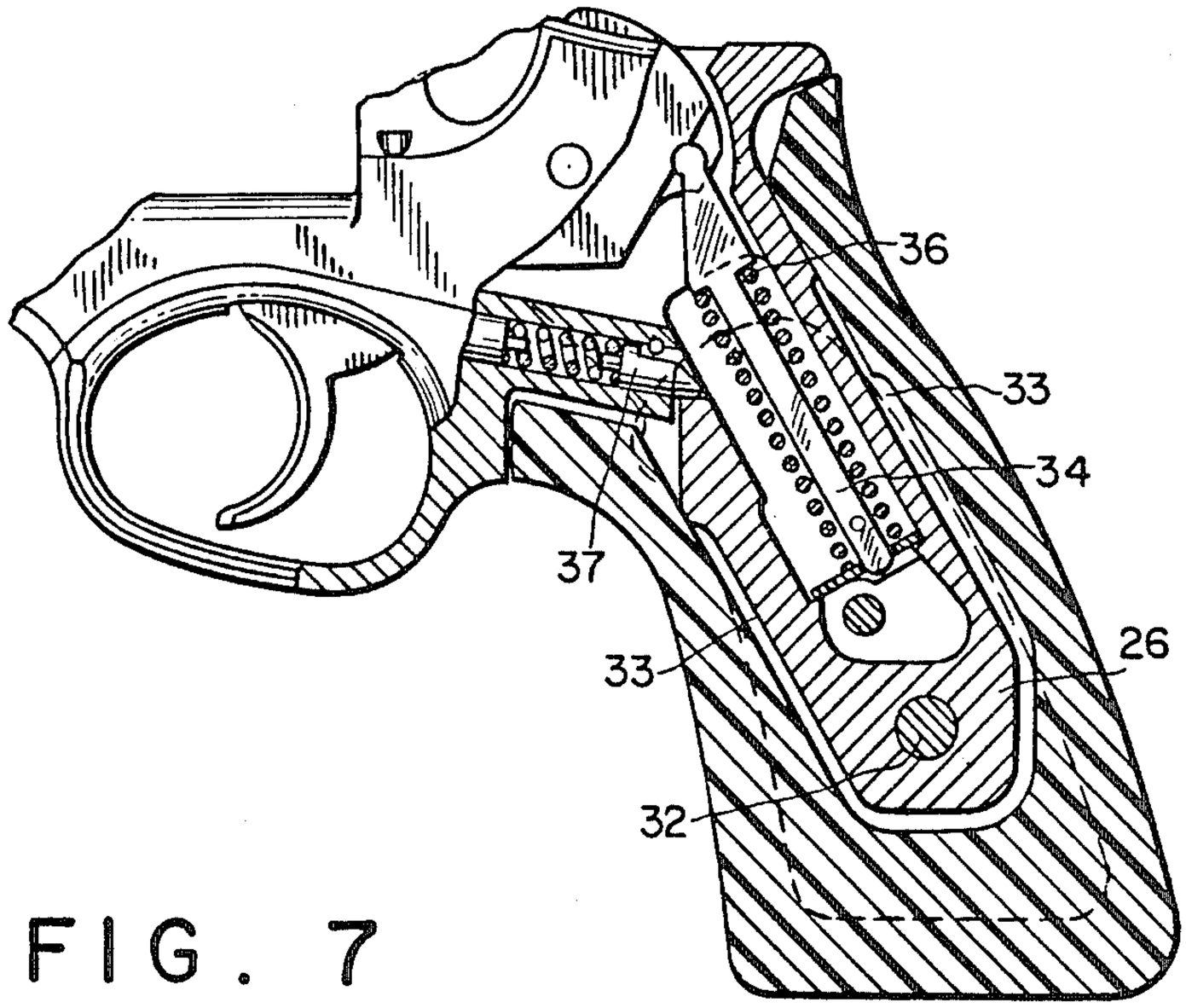

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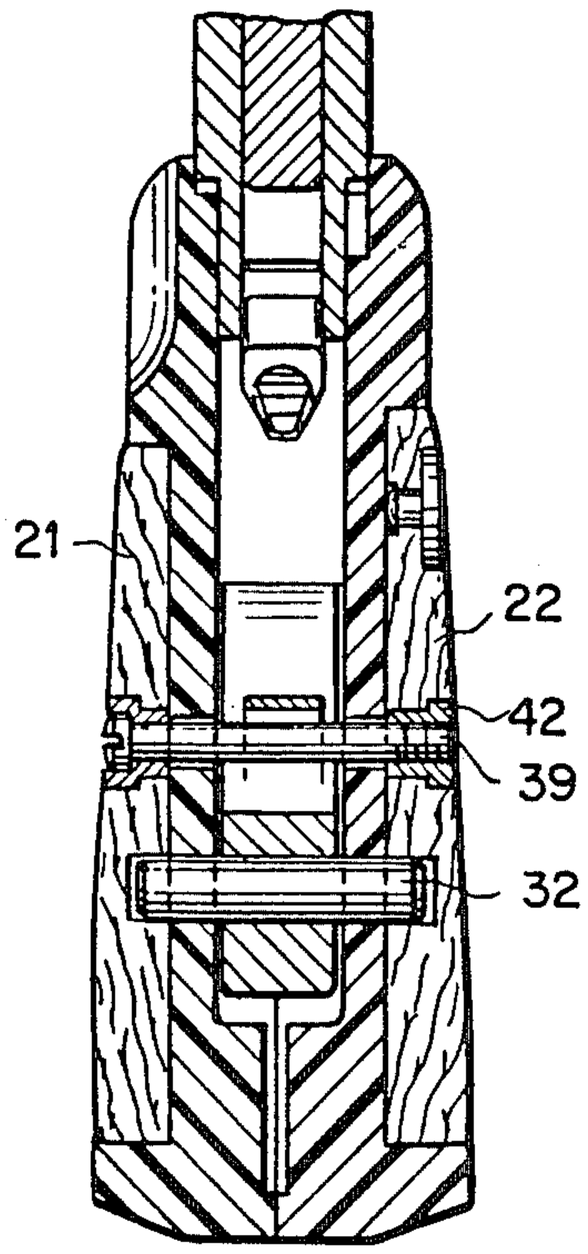

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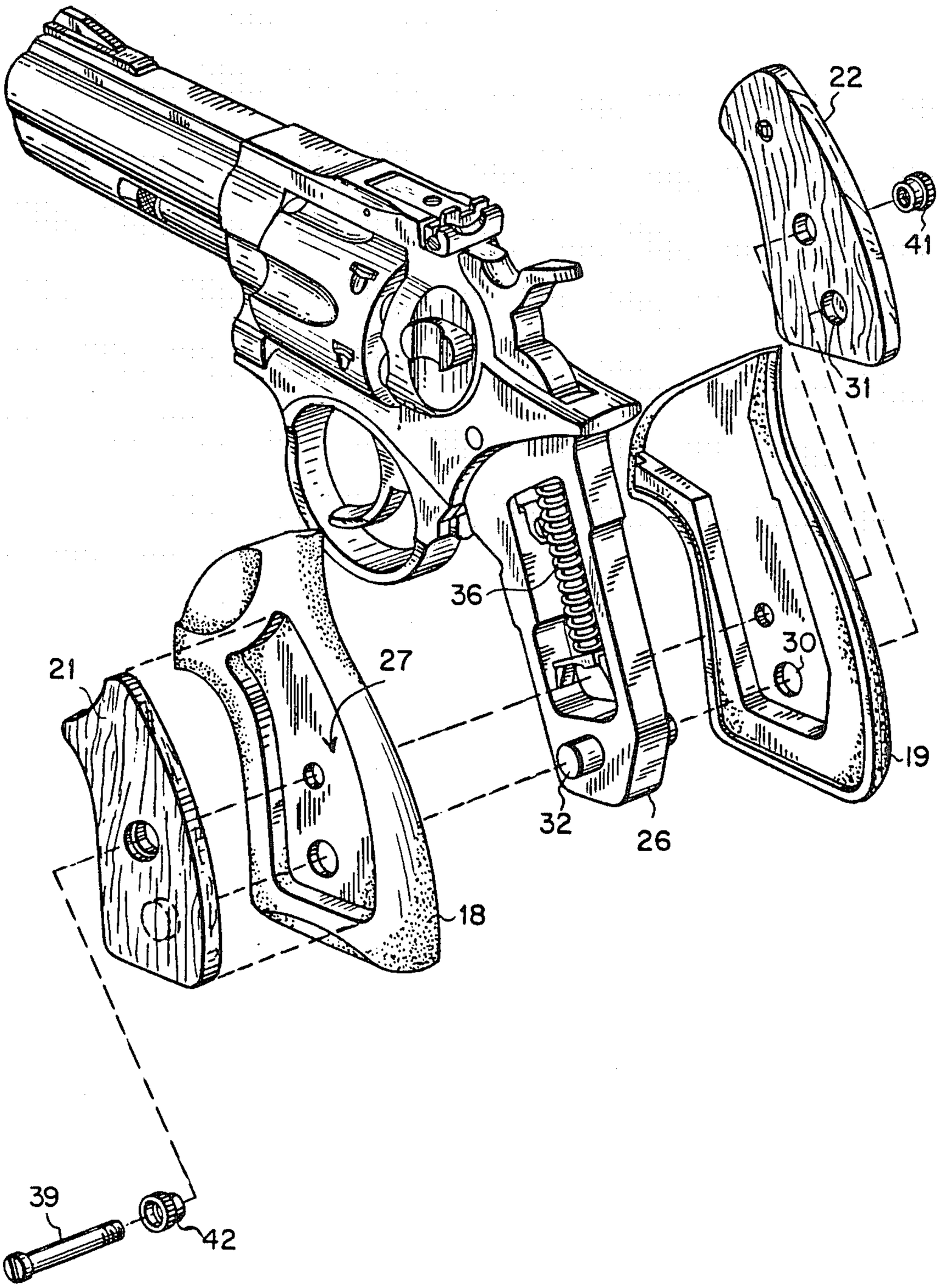

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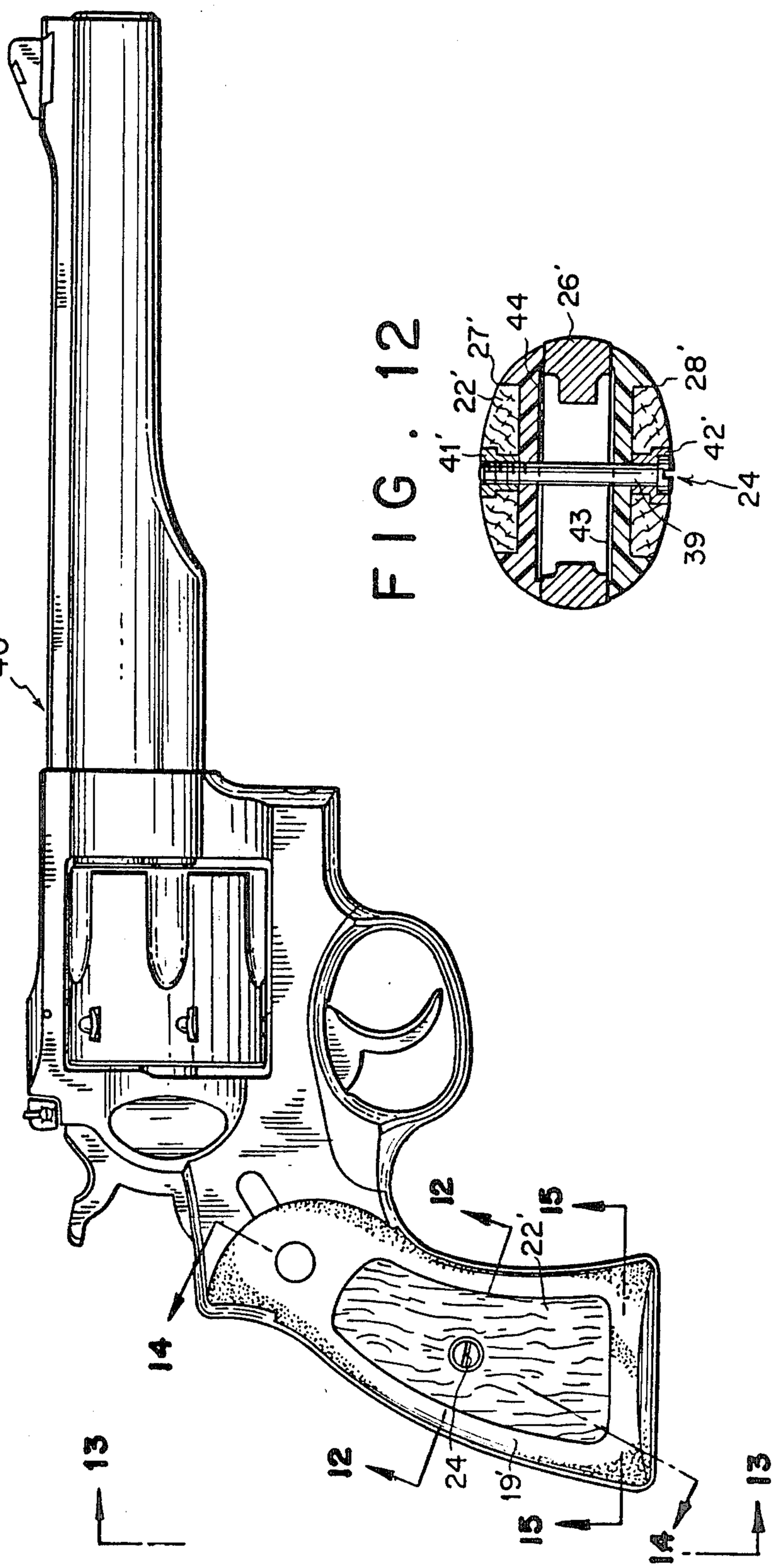

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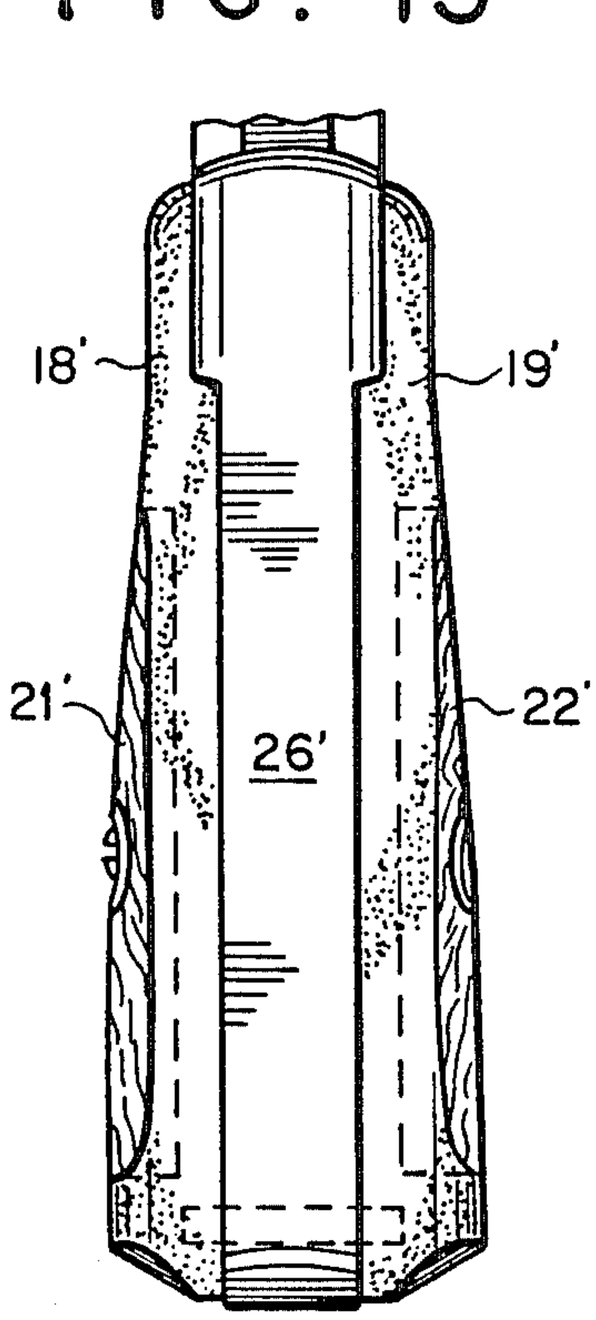
FIG. 13



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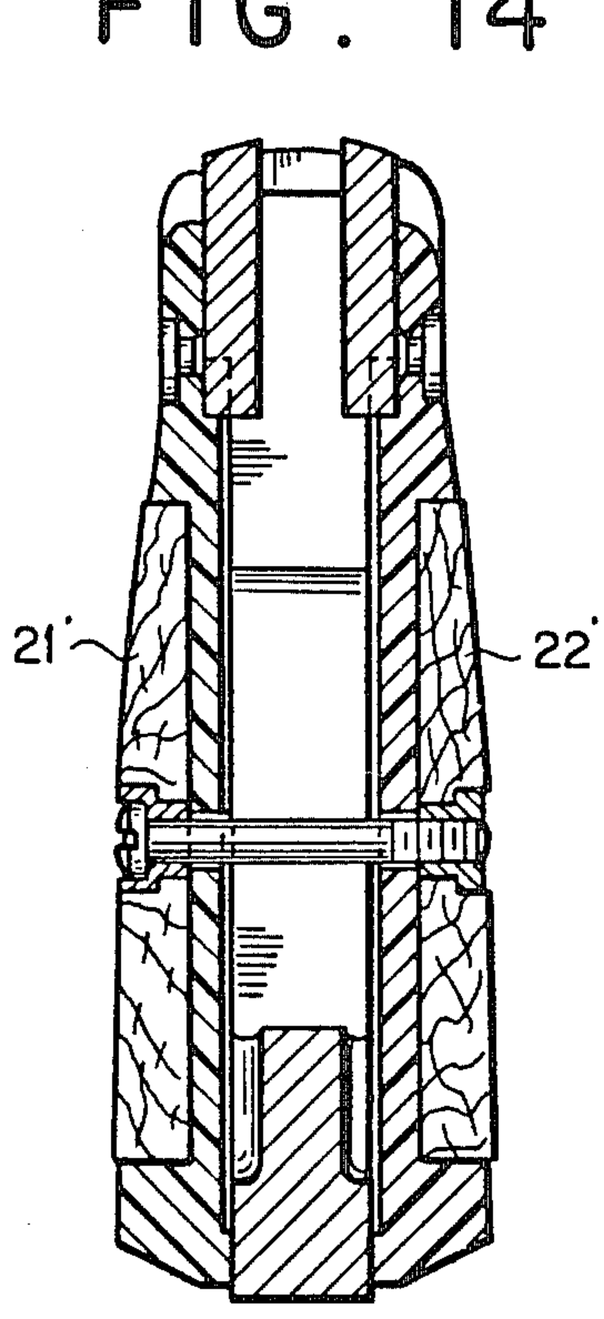

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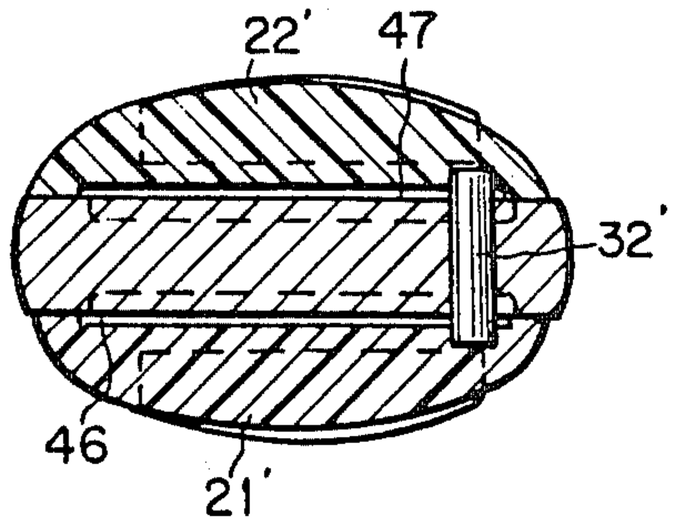

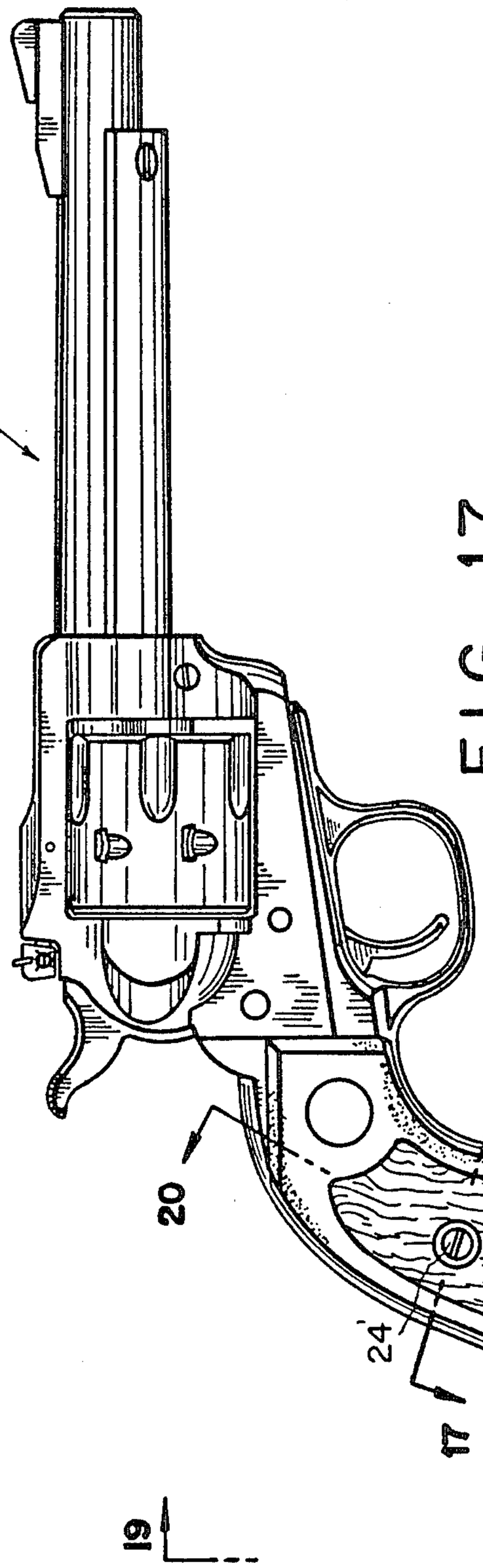

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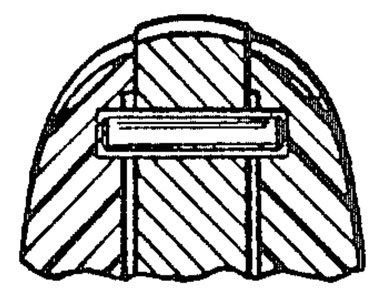

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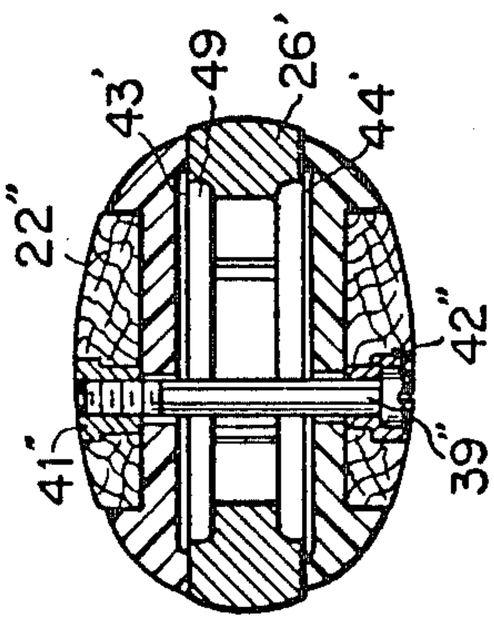

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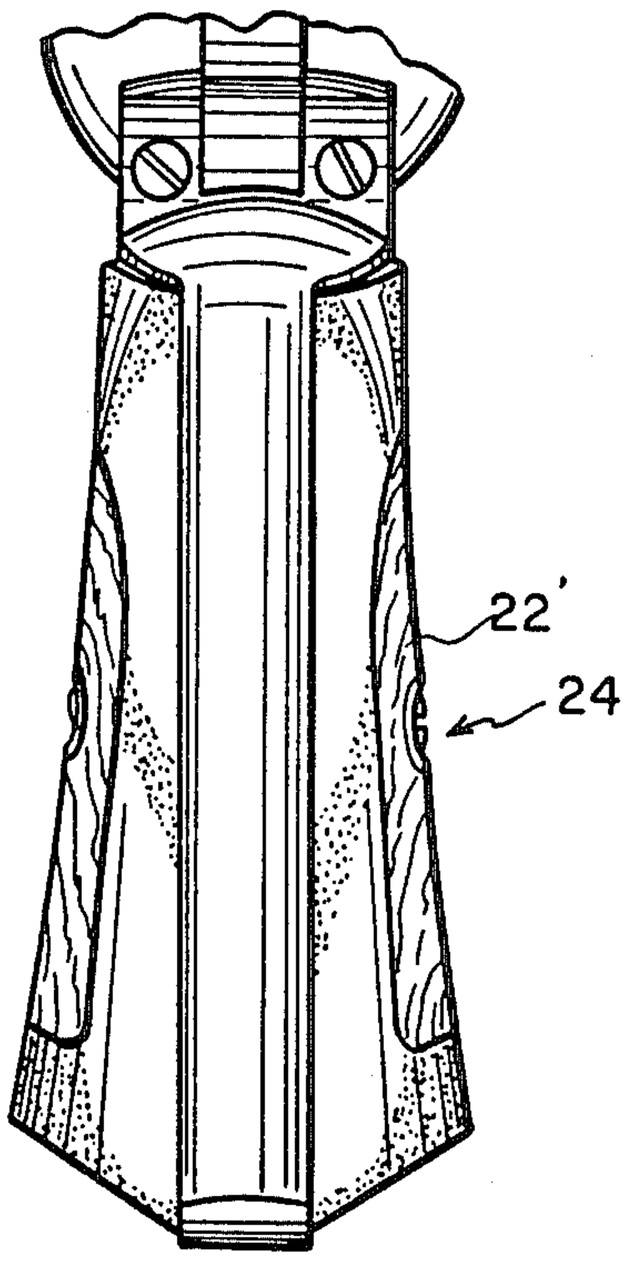

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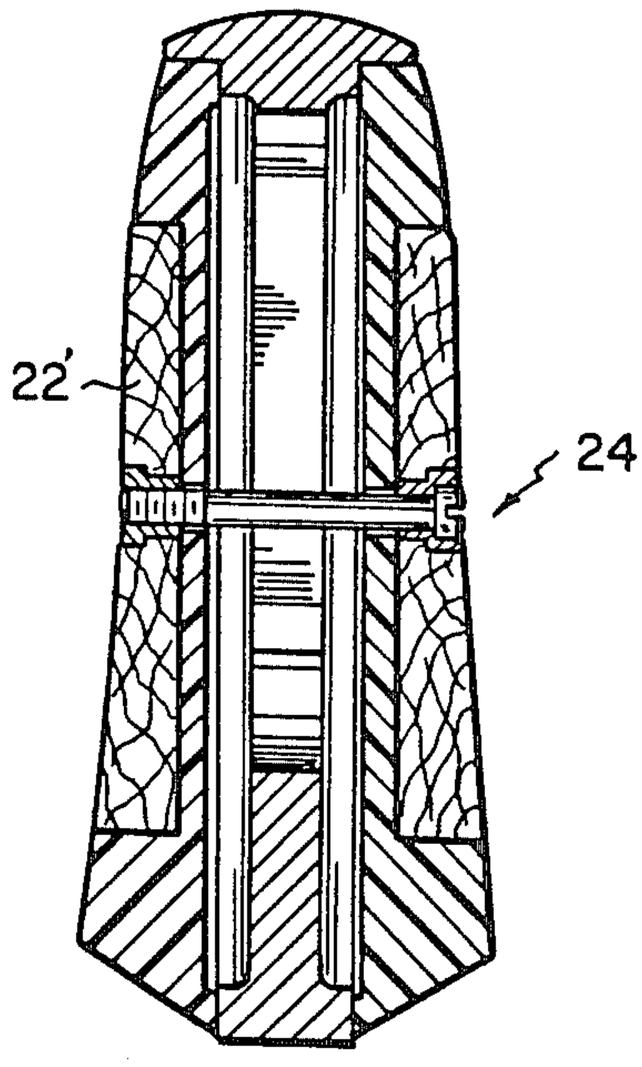

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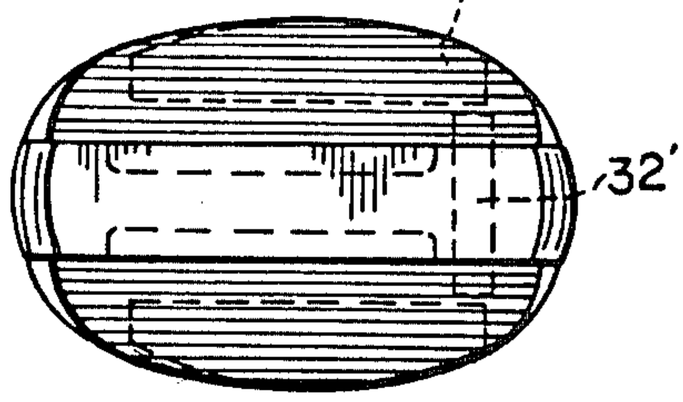

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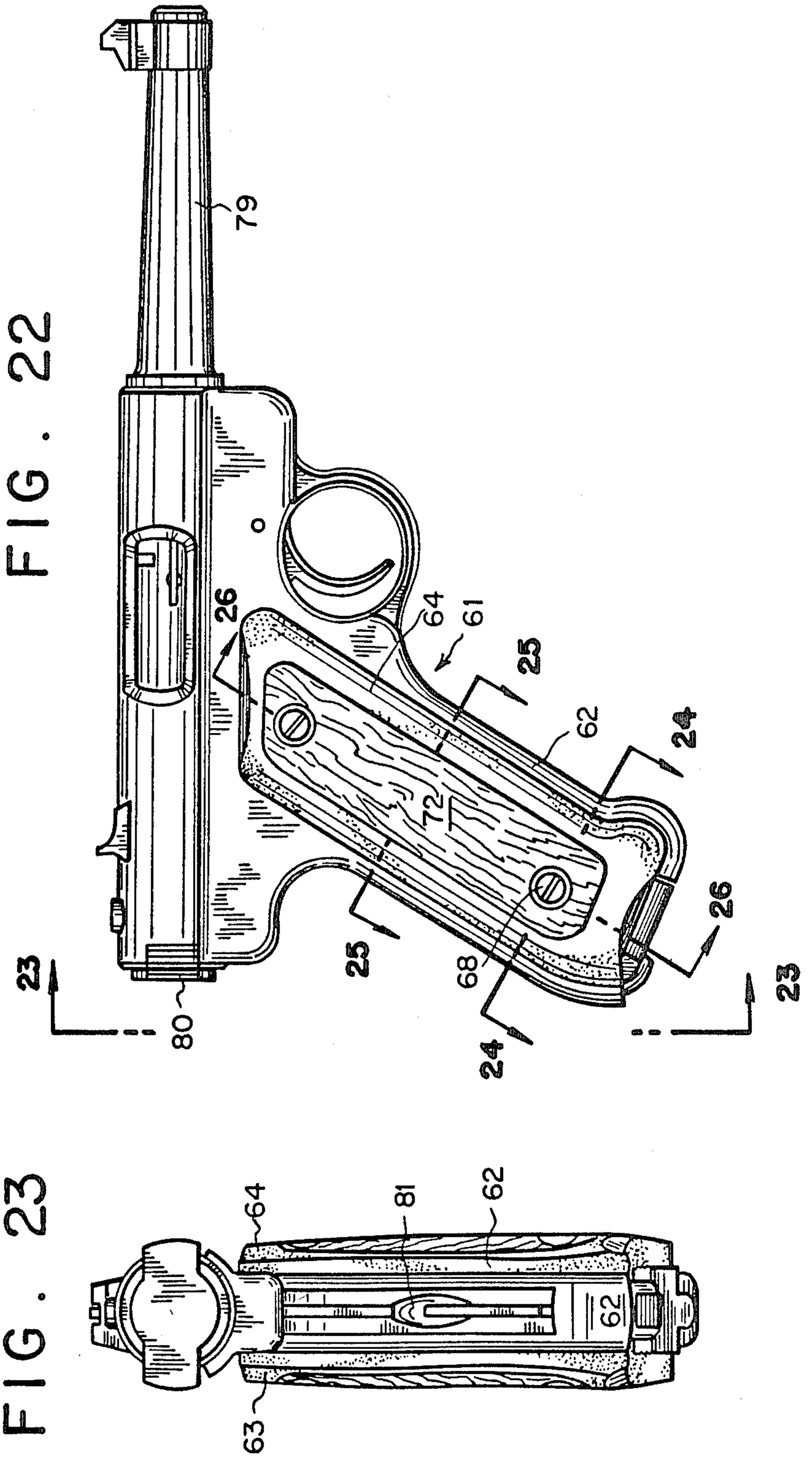

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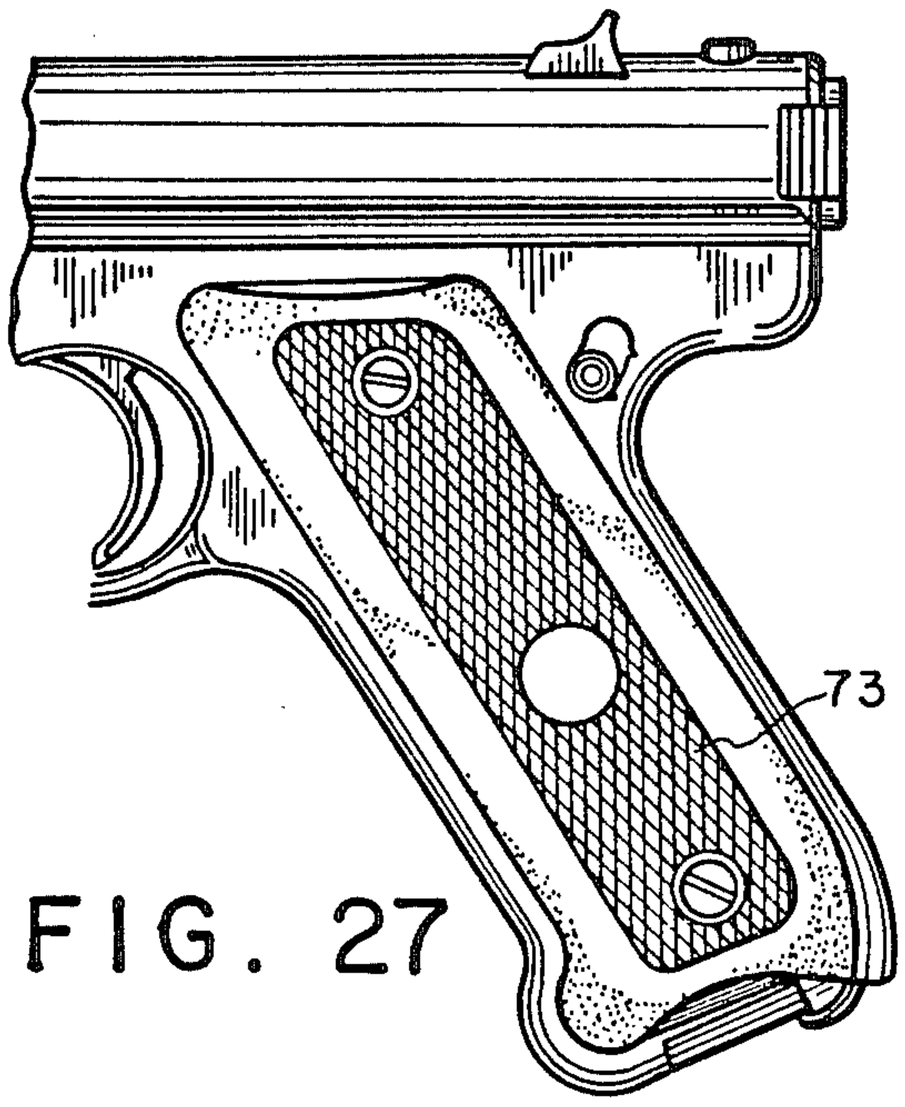

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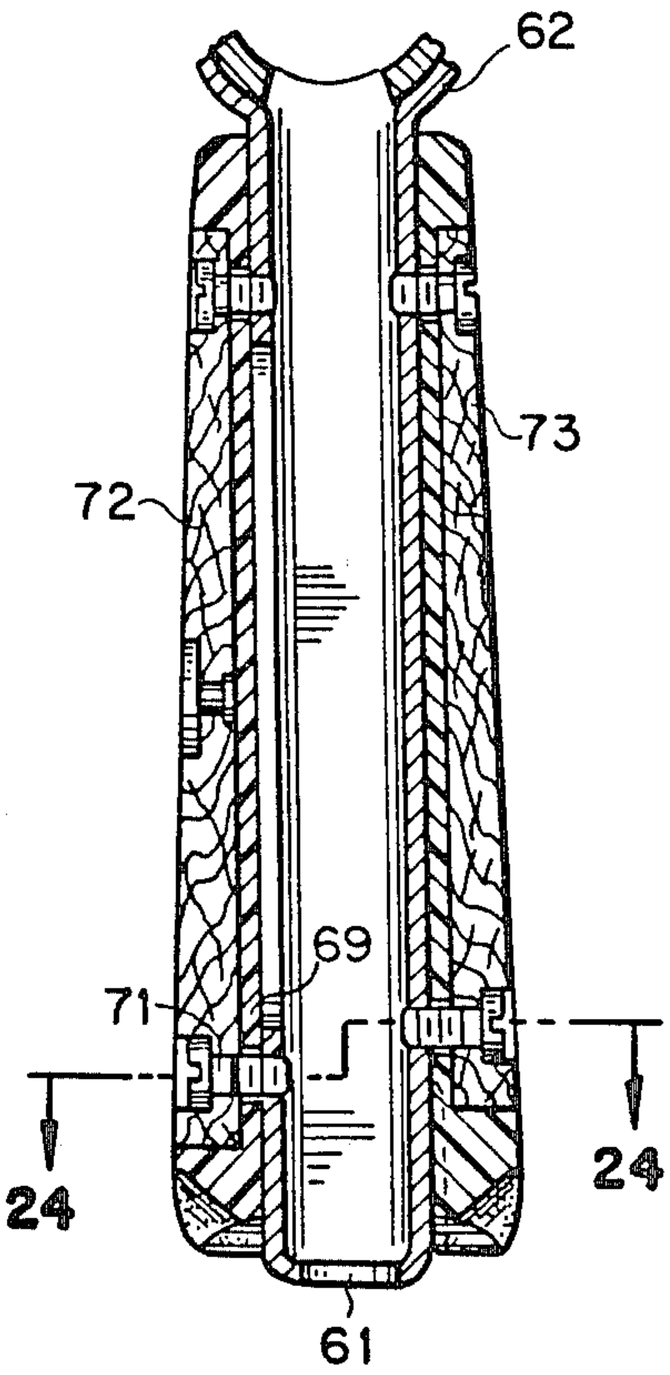
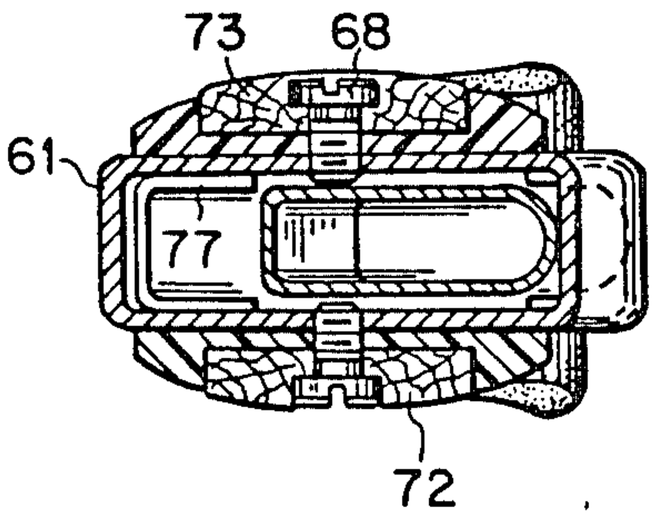


FIG. 26



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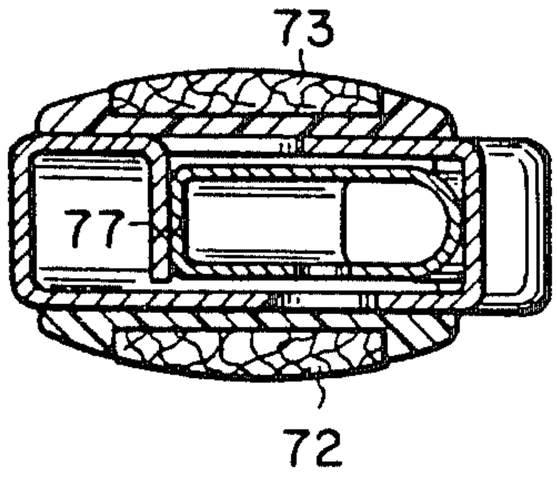

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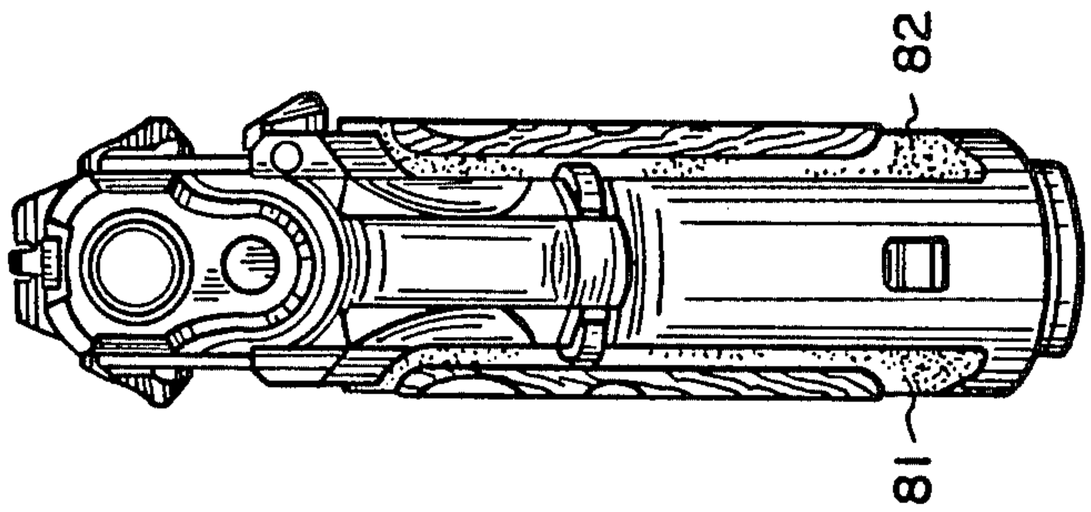

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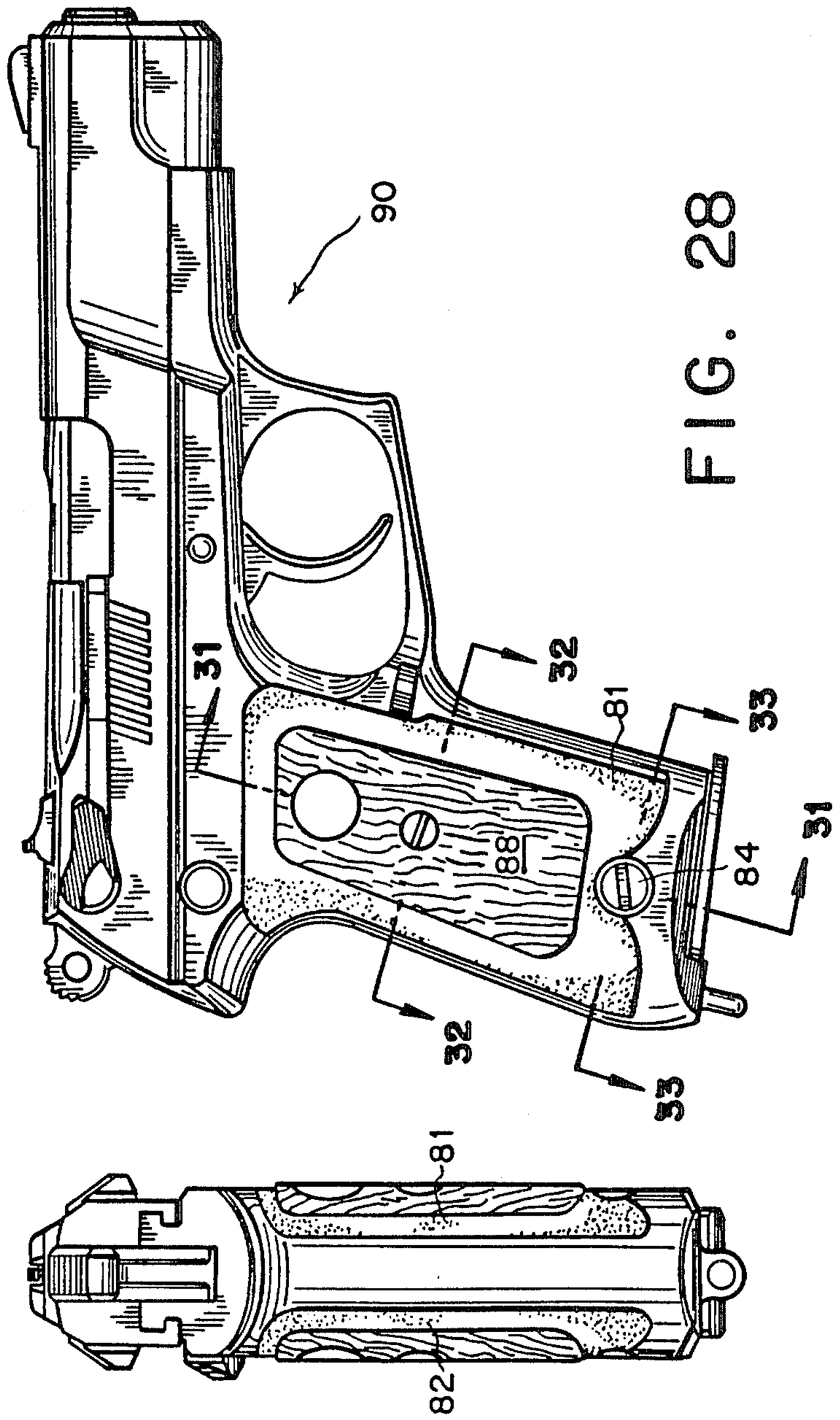

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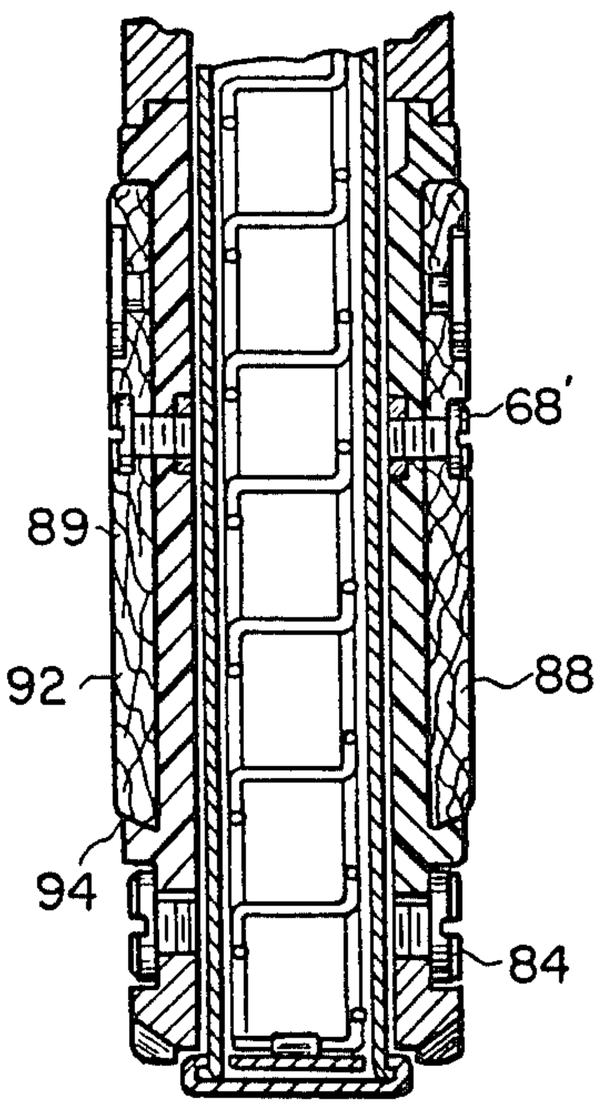

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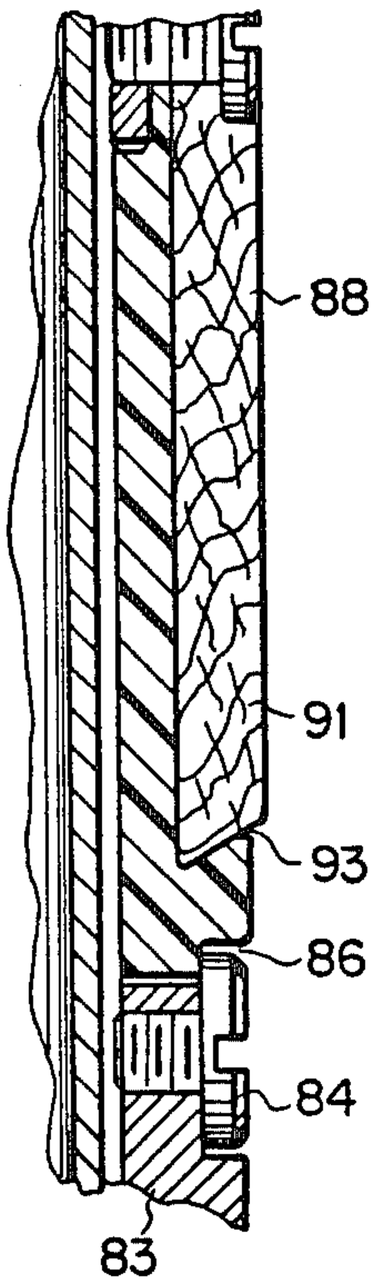

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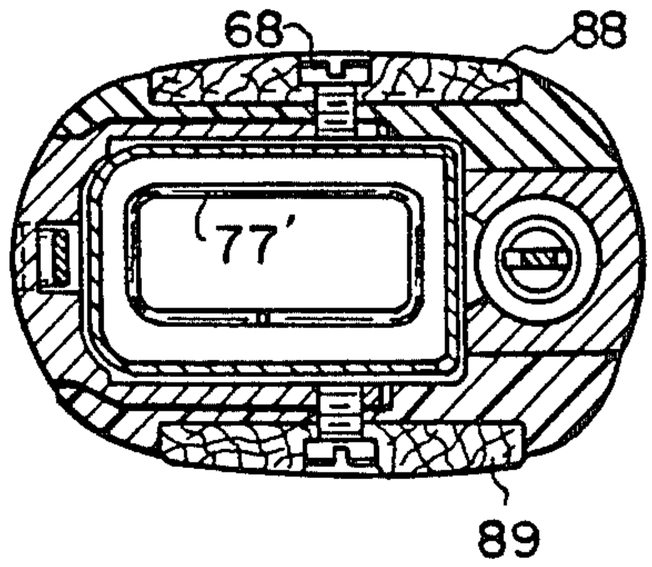

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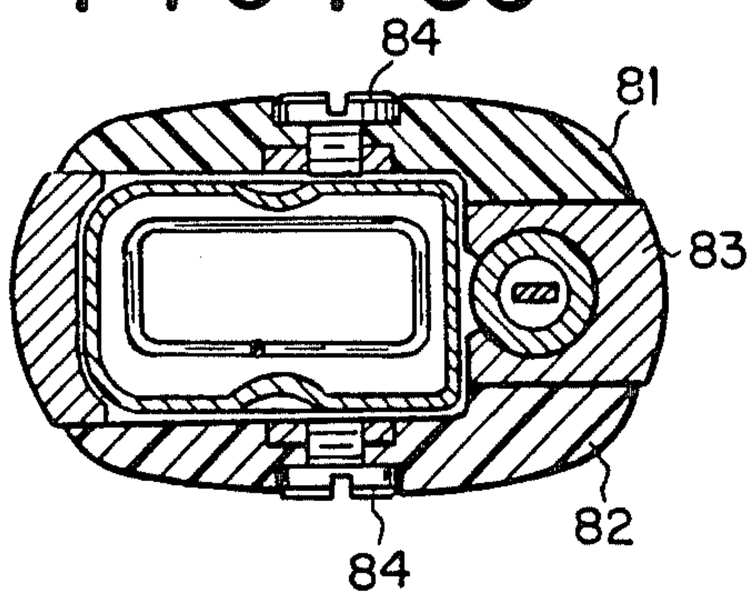

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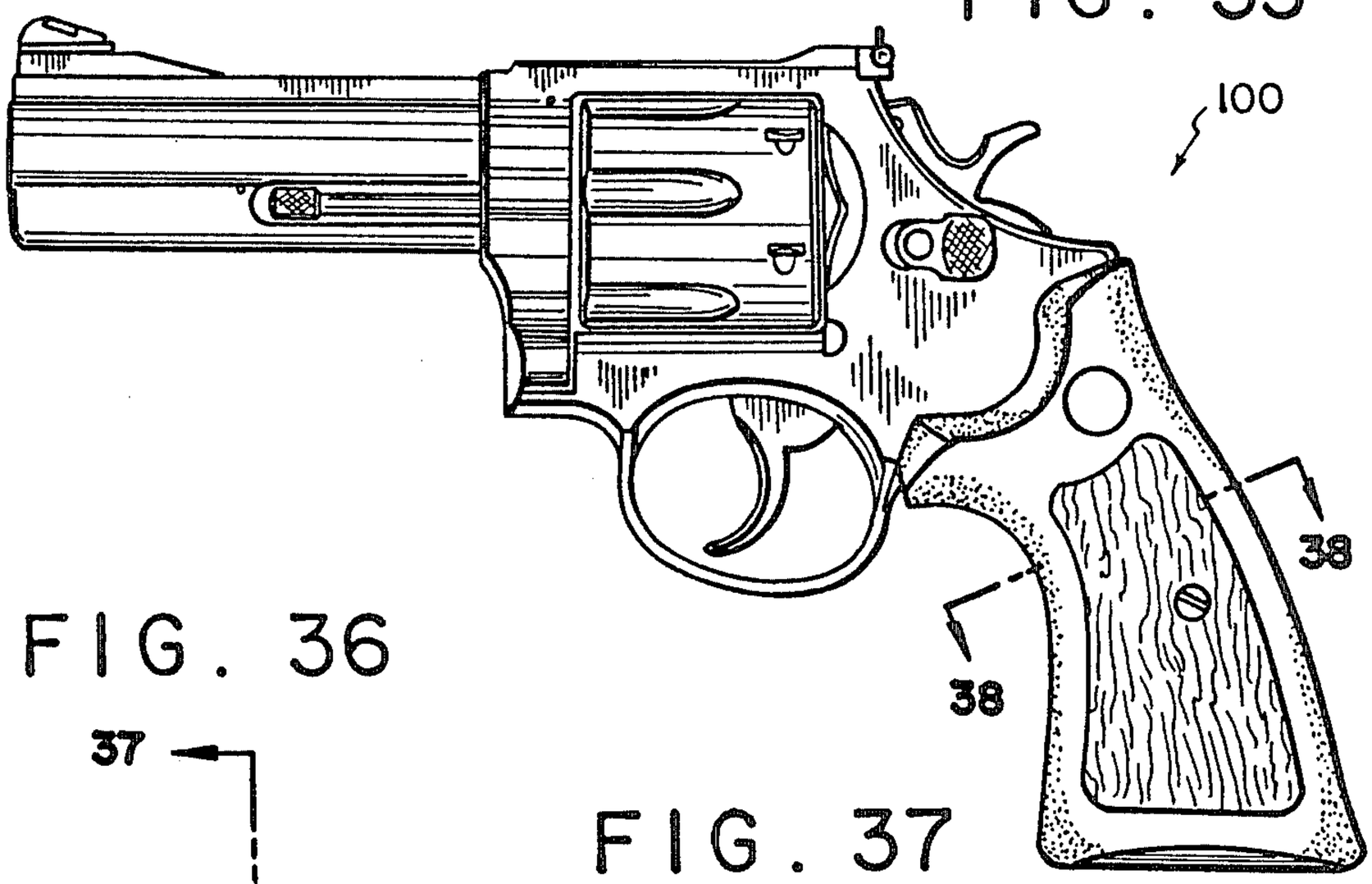
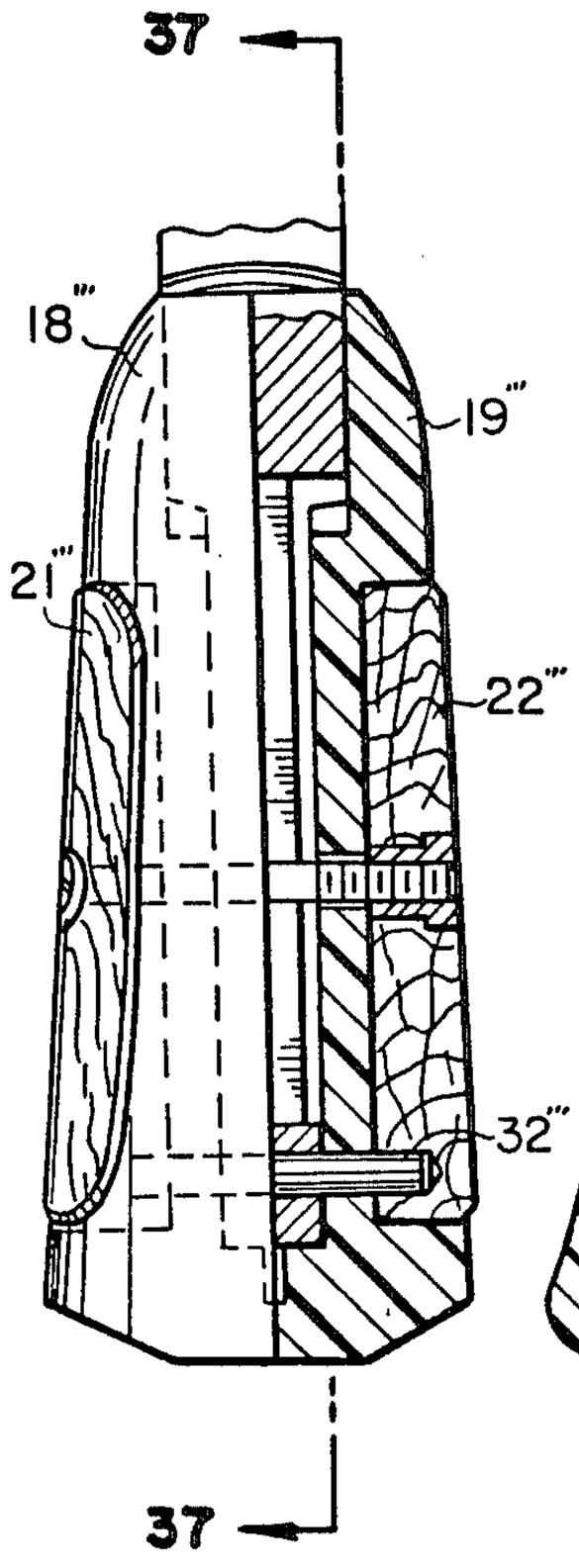
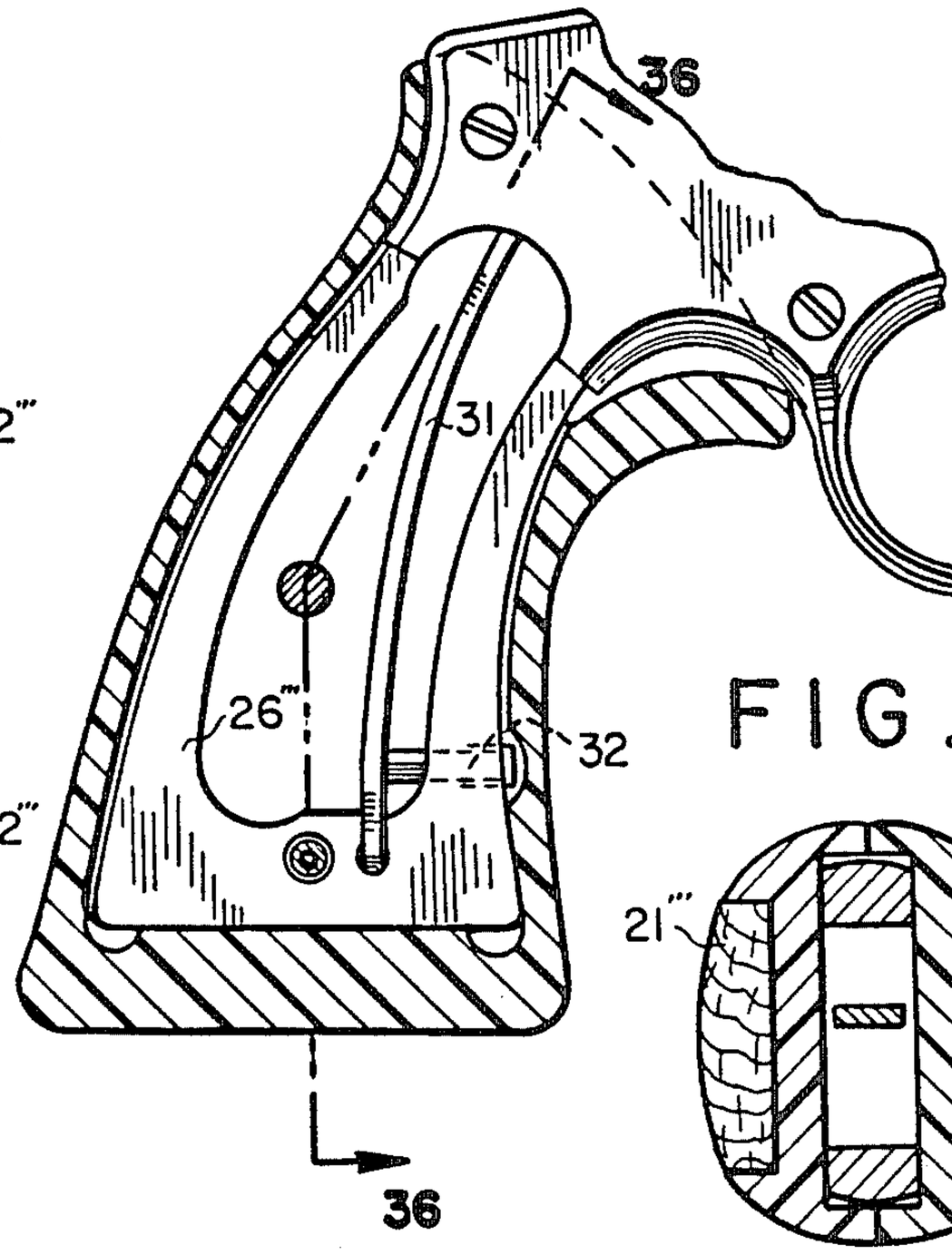


FIG. 36

FIG. 37





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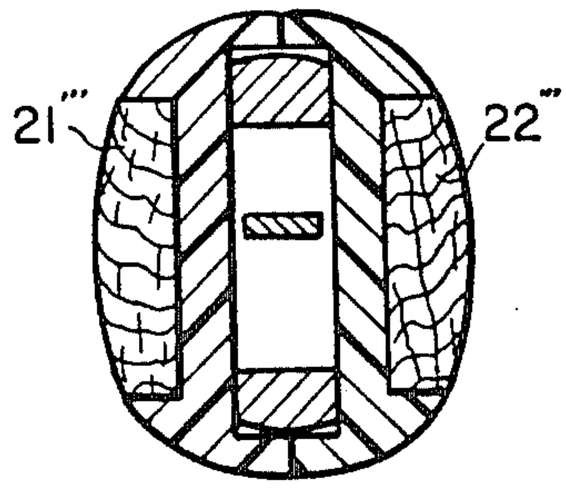

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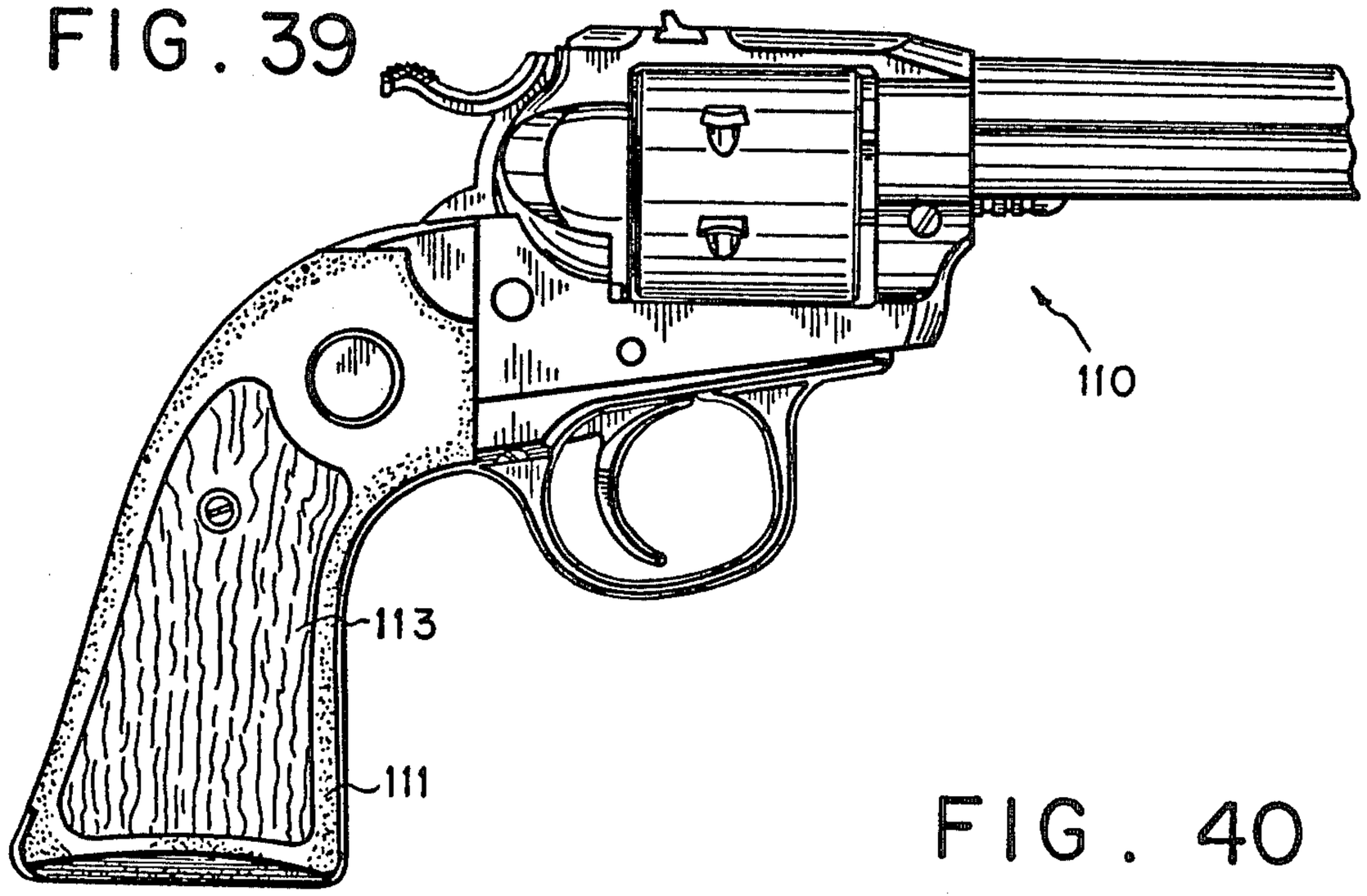
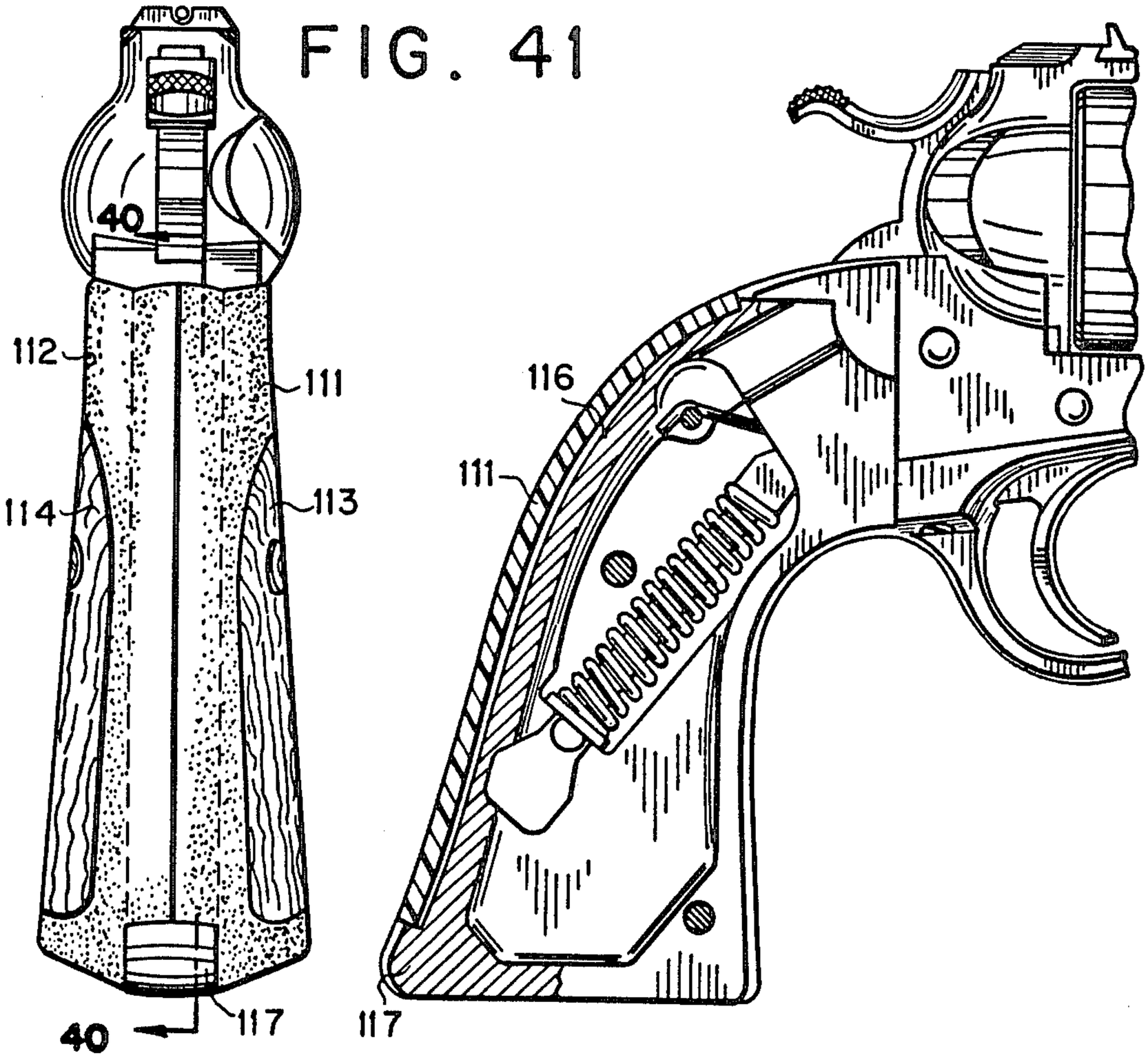


FIG. 40

FIG. 41



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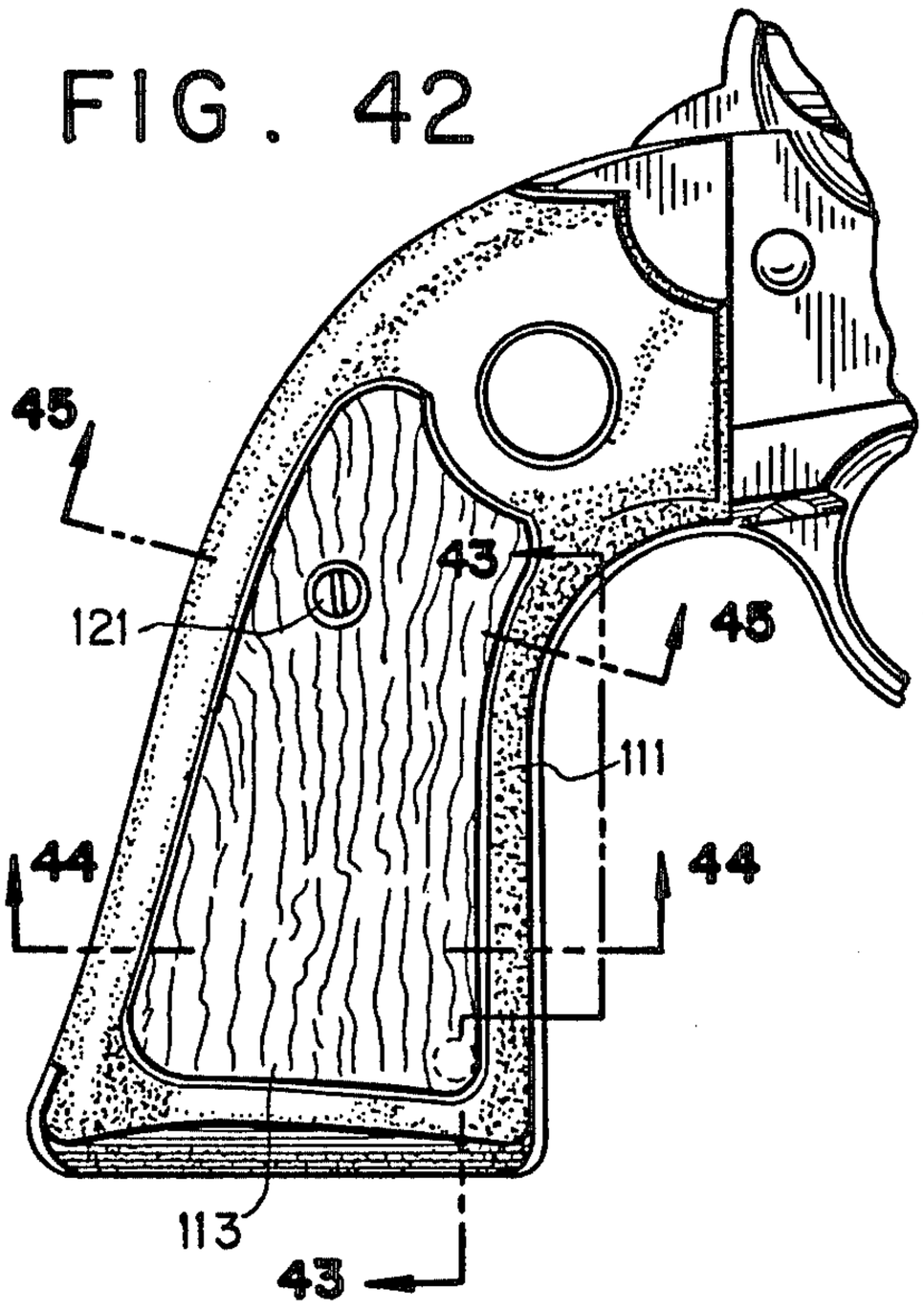

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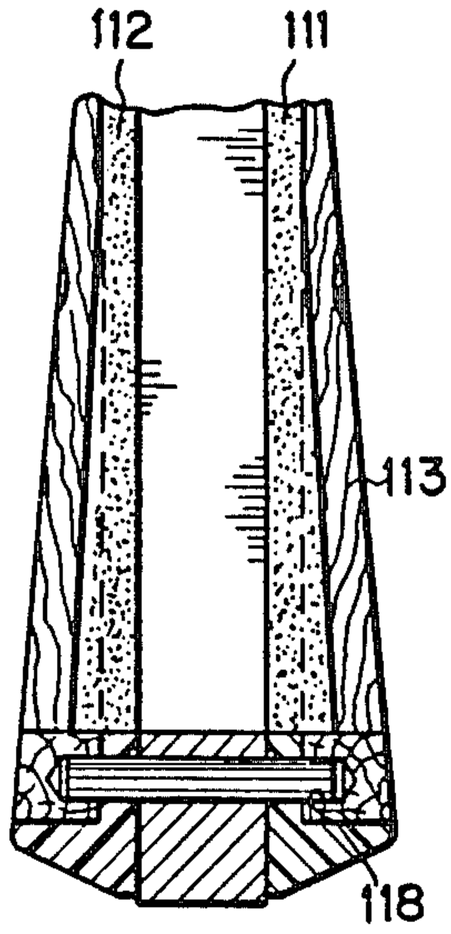

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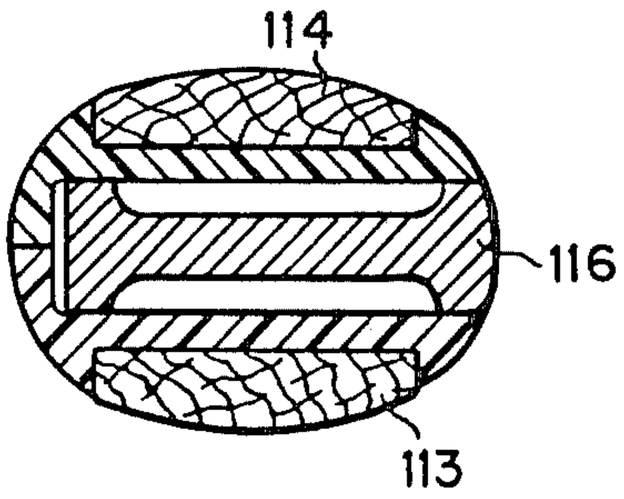

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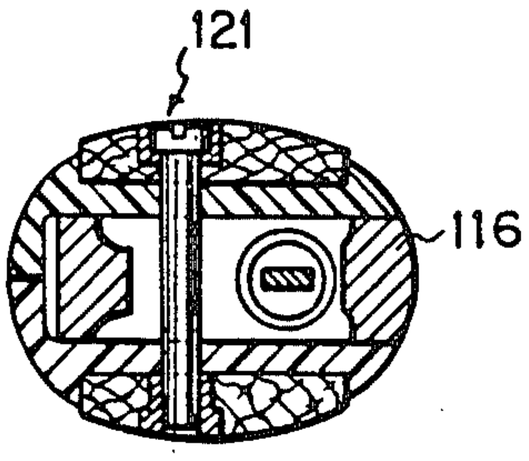

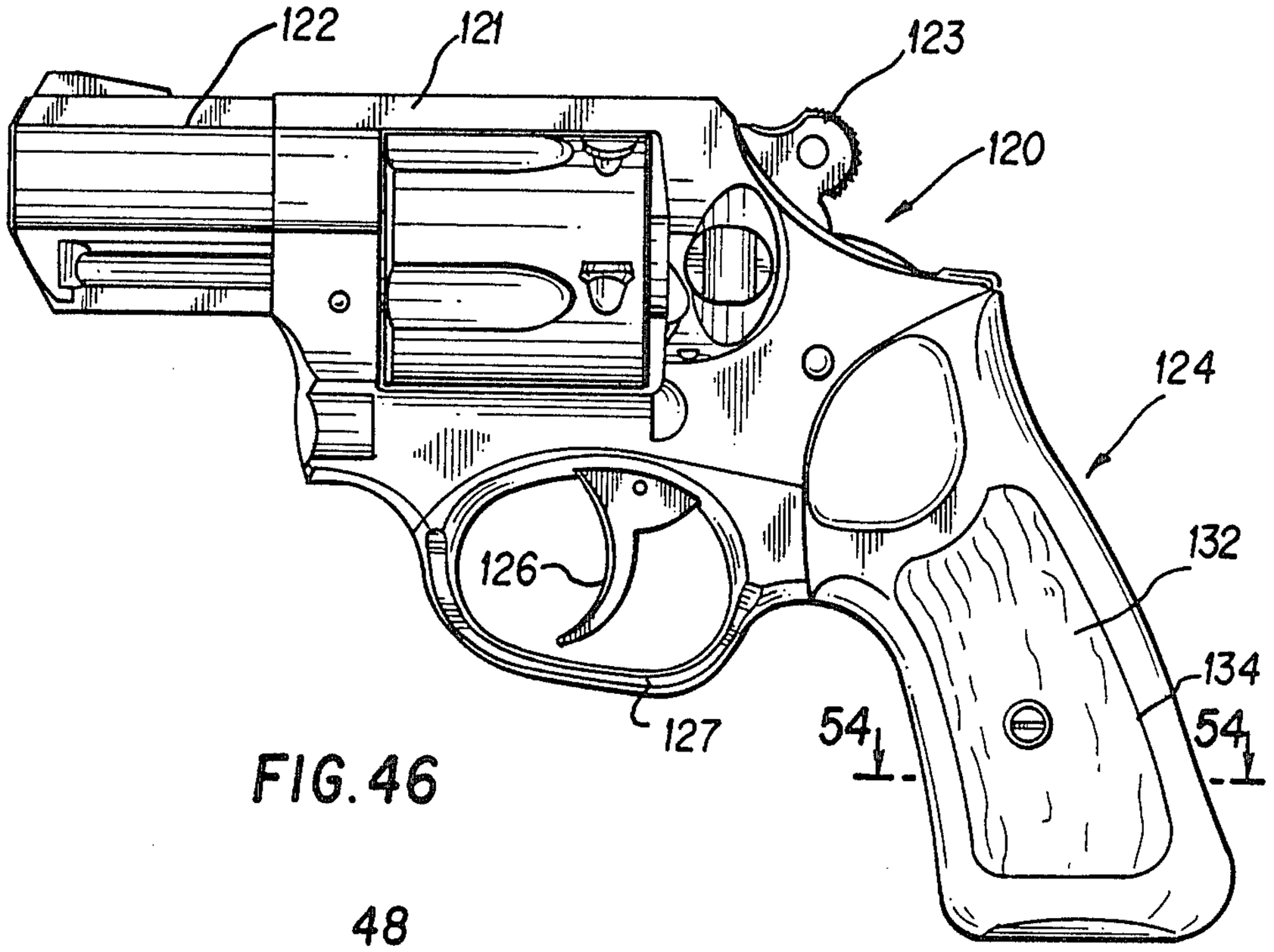

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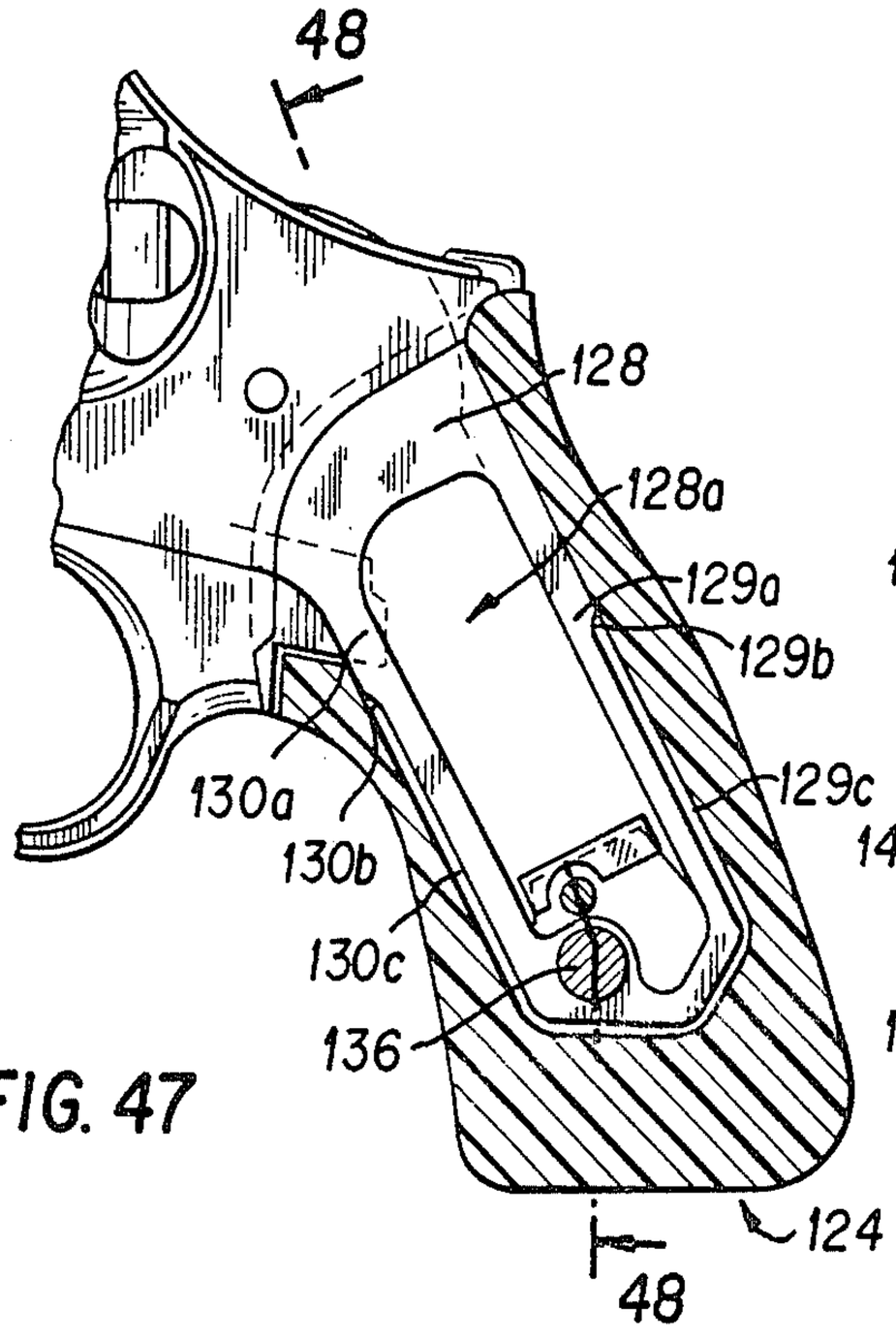

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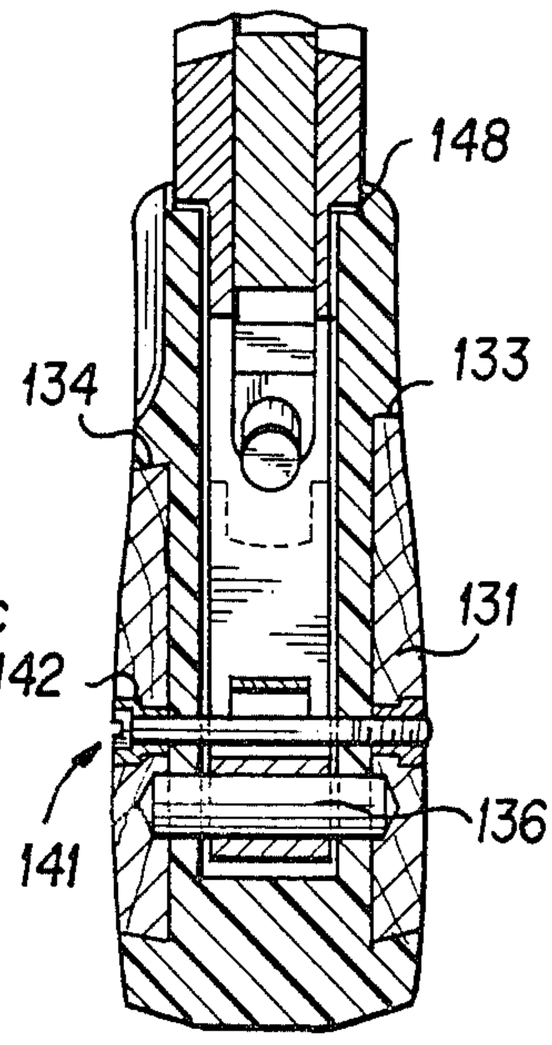

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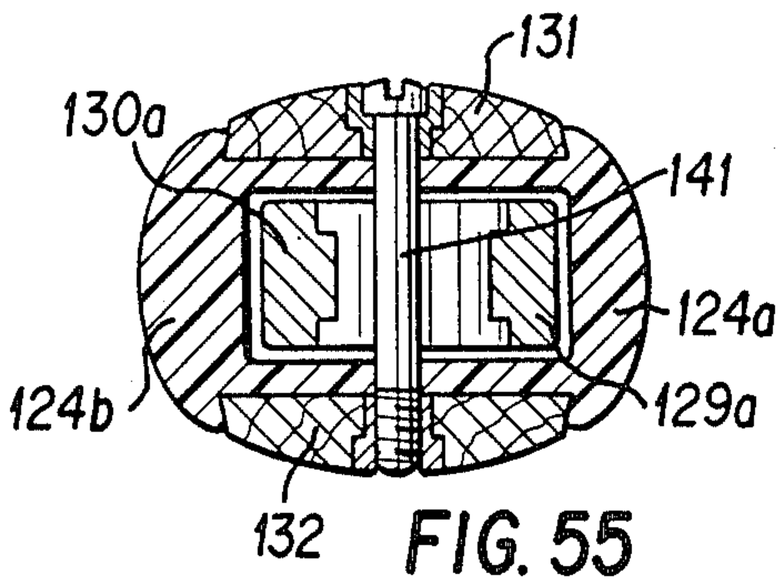

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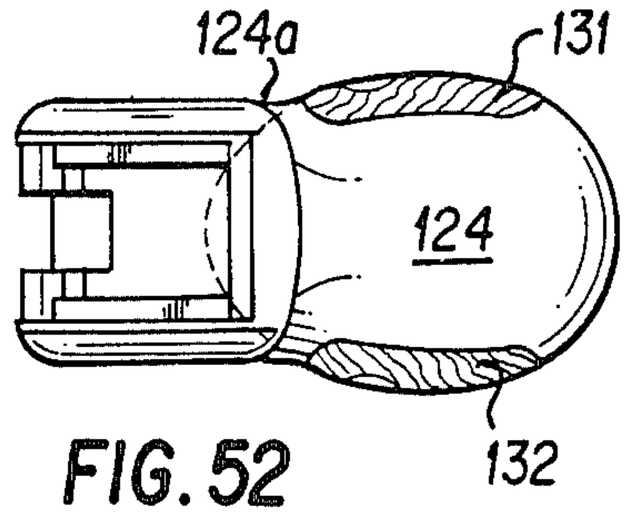

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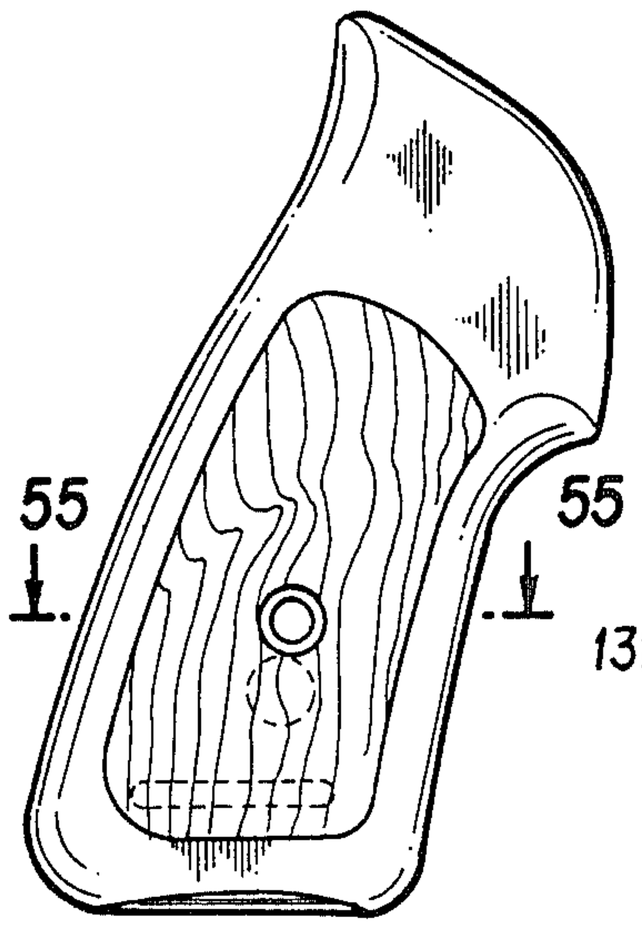

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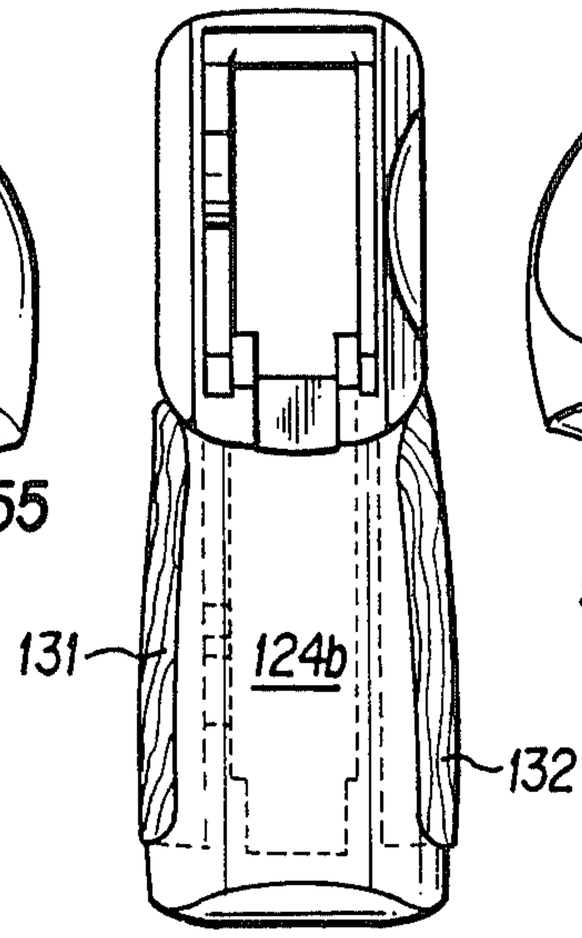
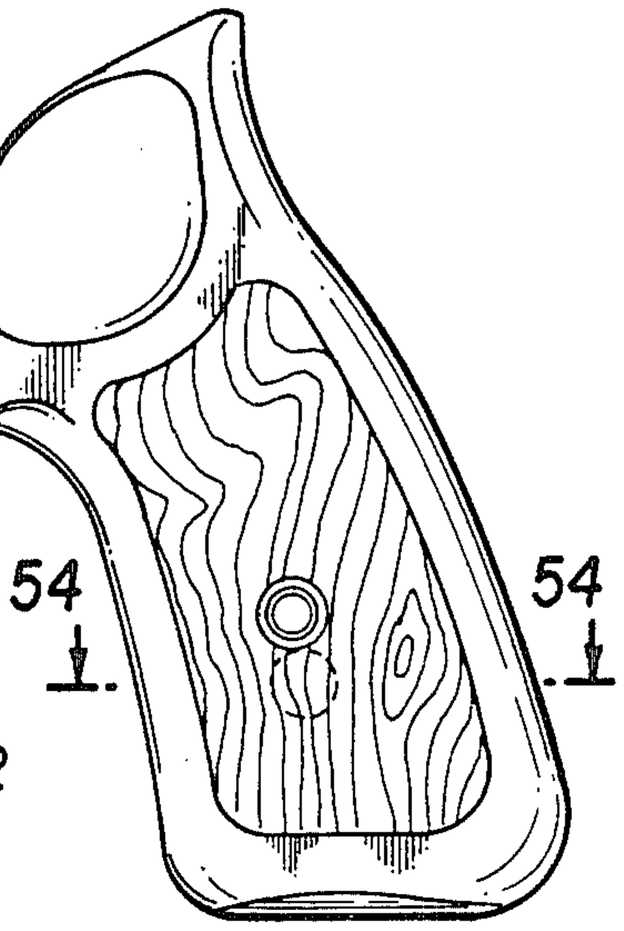


FIG. 50



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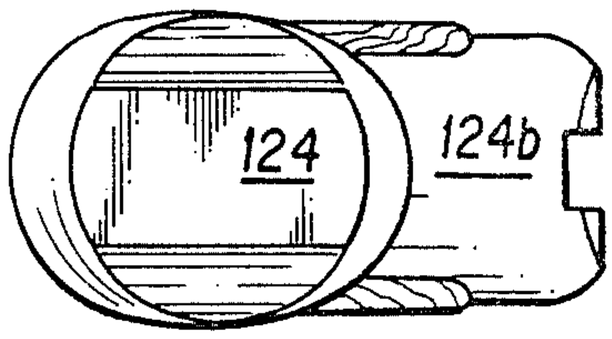

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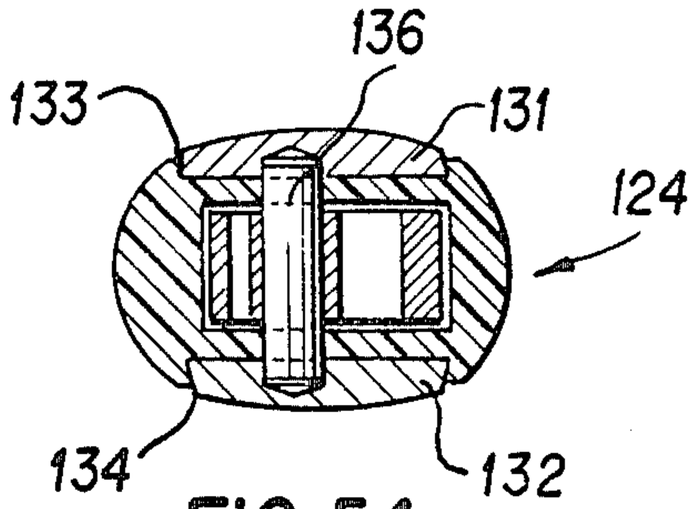

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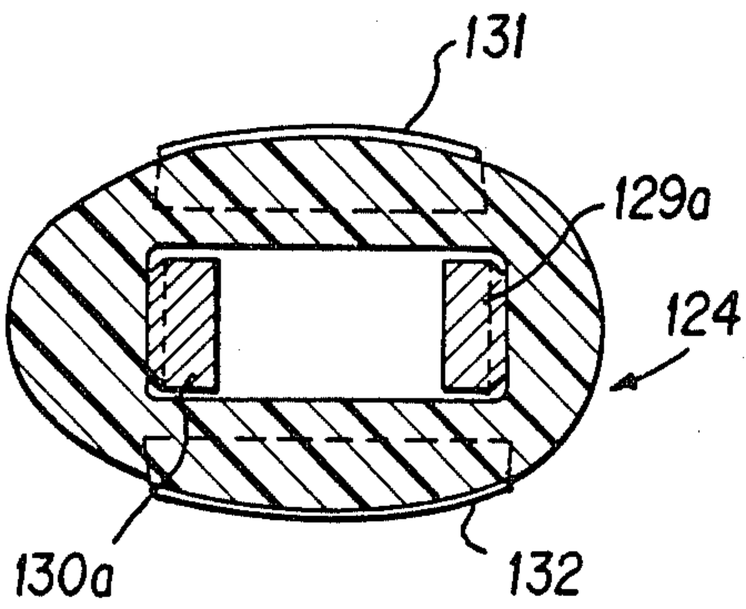
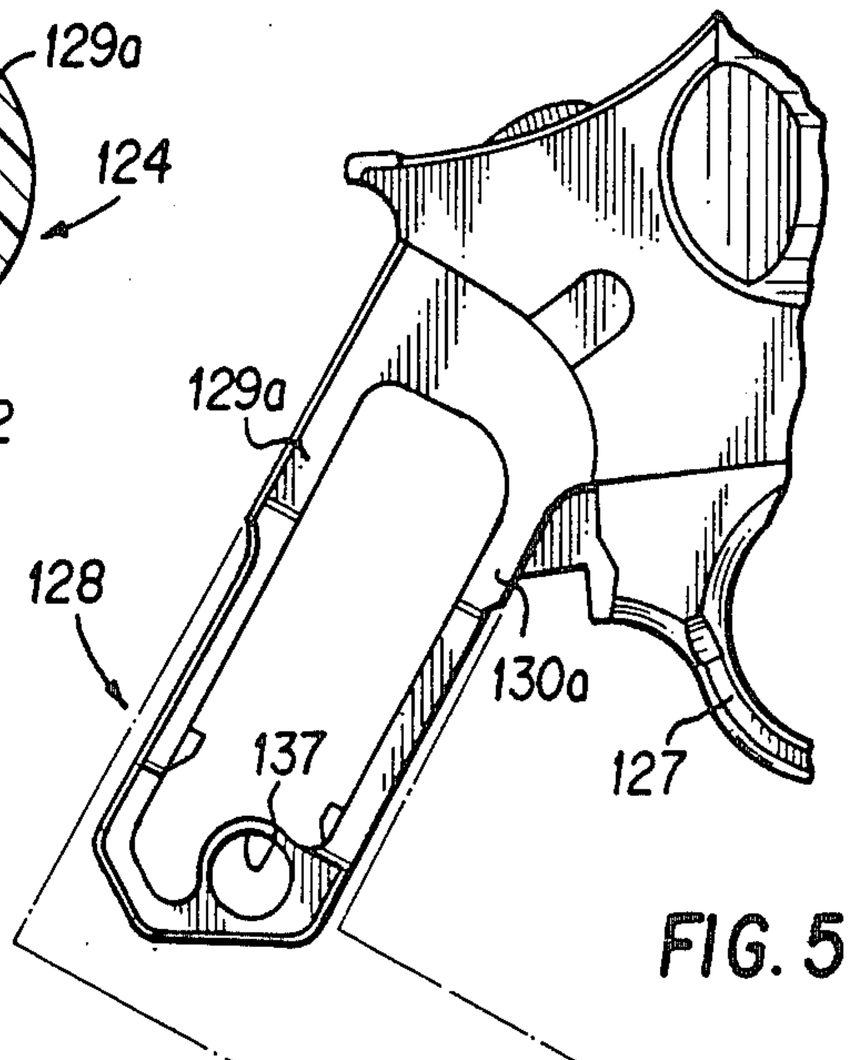


FIG. 56



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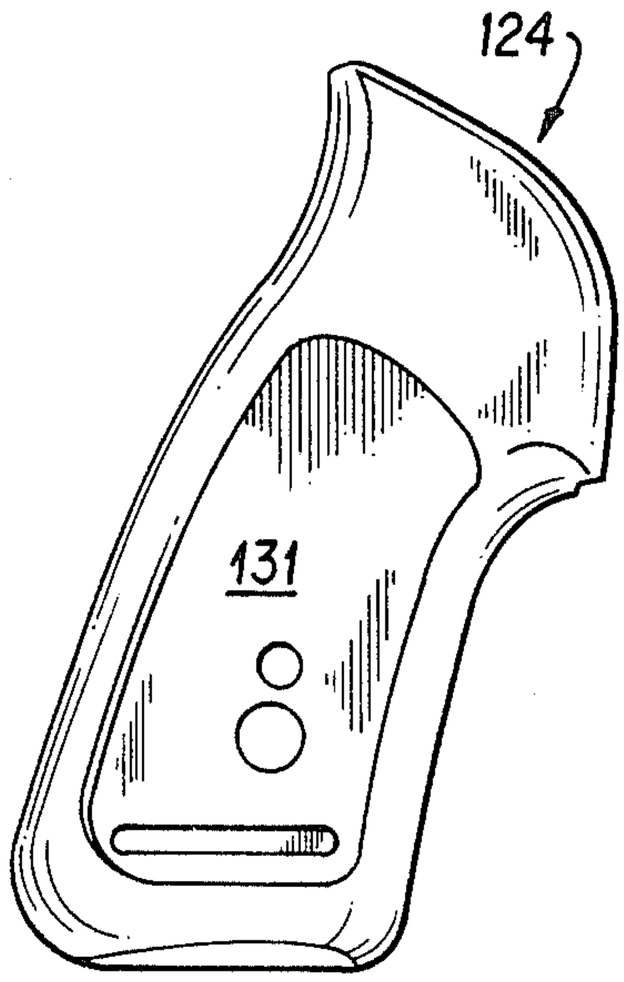
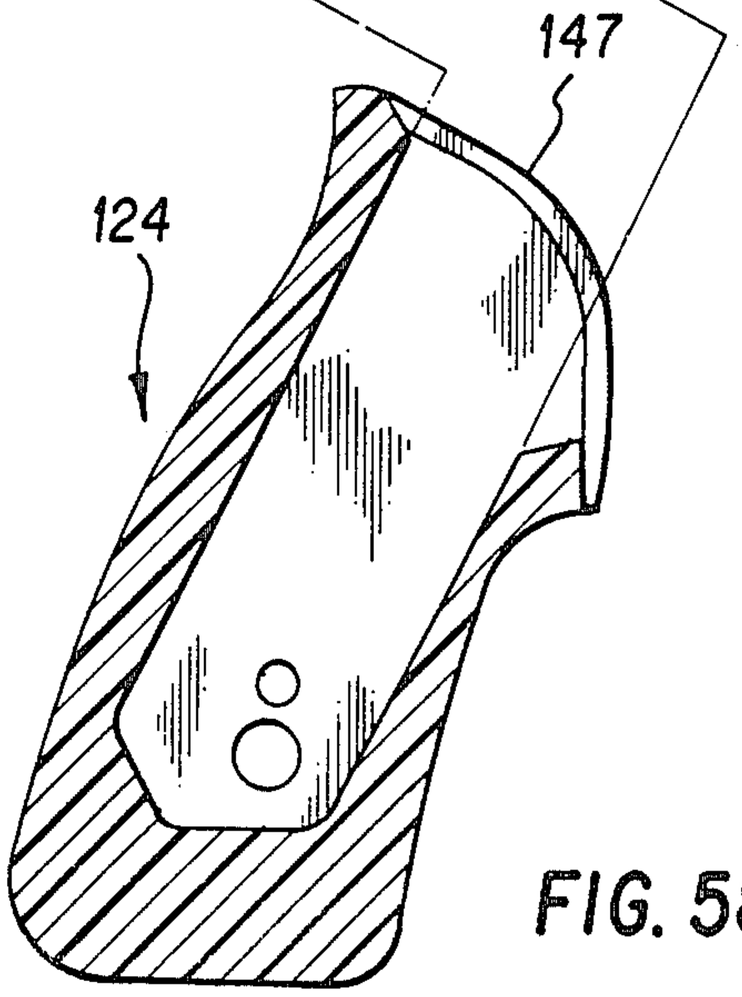


FIG. 59



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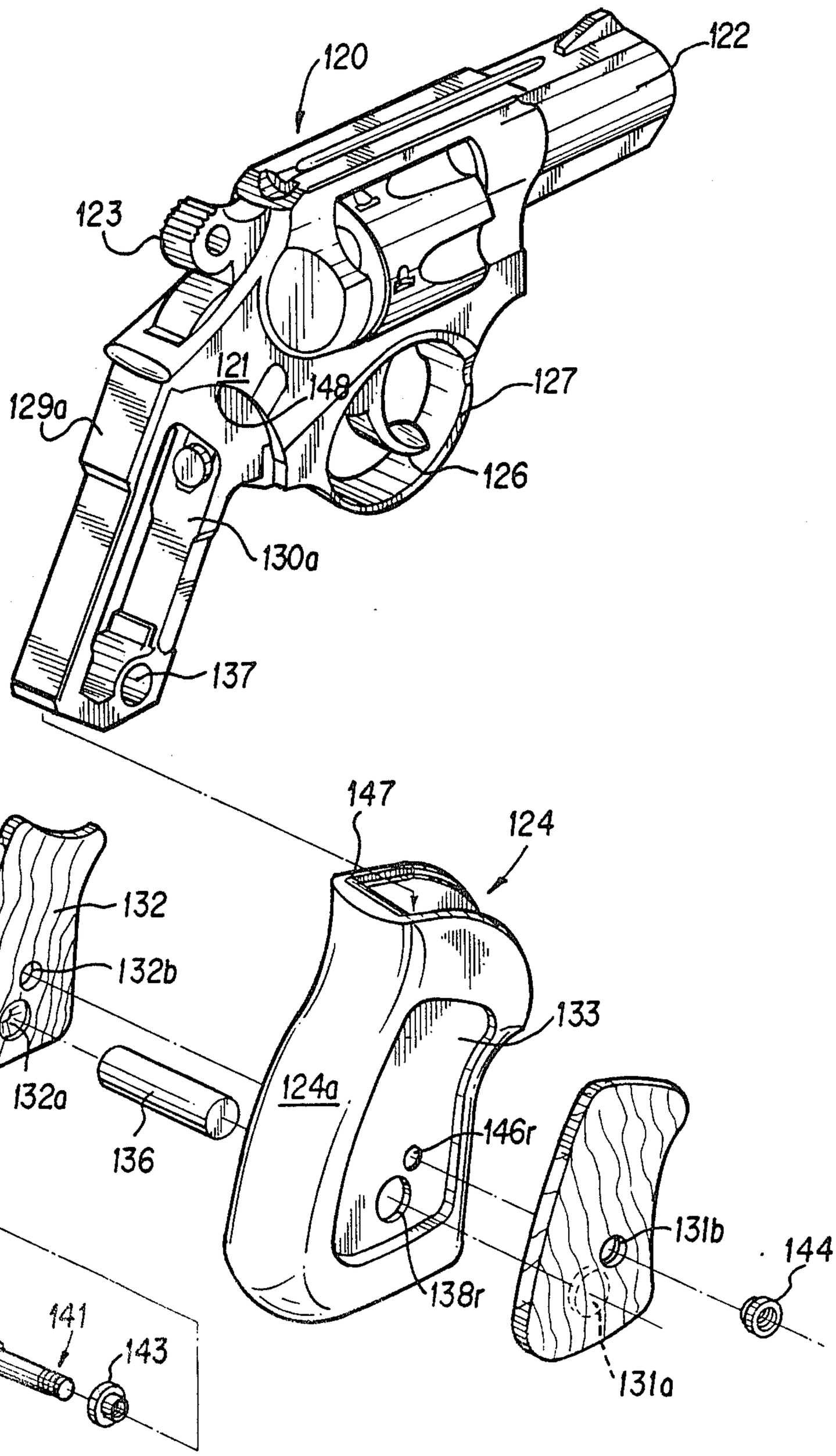
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127
129a
126
130a
137
147
124
132
132b
133
132a
124a
136
146r
131b
144
142
141
138r
143
131a

FIG. 60

GRIPS FOR HANDGUNS

This is a continuation-in-part, of application Ser. No. 716,920, filed Mar. 28, 1985, U.S. Pat. No. 4,625,445.

BACKGROUND OF THE INVENTION

Numerous handgun grip arrangements have been proposed including the use of resilient grip panels with and without internal stiffening members embedded in such panels. Rubber grip panels and wood grip panels of various sizes and shapes have been used over the years.

None of the prior grip arrangements has provided satisfactory gripping by the operator together with an acceptable appearance, versatility and simplicity of design, combined with ease of manufacture.

SUMMARY OF THE INVENTION

Broadly, the present invention provides a novel grip arrangement for handguns in which elastomer grip elements are positioned on each side of the handle frame. The elastomer grip elements (which may be spaced-apart or urgedly engaged or integrally formed) have recesses formed in them to receive non-deformable externally inserted stiffening elements. Fasteners are used to secure the elastomer grip elements and externally inserted stiffening elements to each other and to the handle frame.

It is a feature of the invention that the externally inserted stiffening elements are shaped and sized to be capable of being gripped by the handgun operator to move these externally inserted stiffening elements toward the handle frame thus deforming the resilient grip elements and providing a firm and comfortable grip for the handgun operator. The externally inserted stiffening elements further add to the functionality and appearance of the firearm, and the grips so constructed offer the advantages of superior cushioning against recoil and comfortable gripping surfaces for the shooter.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a left side partial elevational view of a revolver including the present invention;

FIG. **2** is a right side partial elevational view of the revolver;

FIG. **3** is a right side elevational view of the handle of the revolver;

FIG. **4** is a rearward elevational view of the handle of the revolver;

FIG. **5** is a sectional view taken along the line **5—5** of FIG. **3**;

FIG. **6** is a sectional view taken along the line **6—6** of FIG. **3**;

FIG. **7** is a sectional view taken along the line **7—7** of FIG. **4**;

FIG. **8** is a sectional view taken along the line **8—8** of FIG. **4**;

FIG. **9** is a view taken along line **9—9** of FIG. **4**;

FIG. **10** is an exploded perspective view of the revolver including the handle;

FIG. **11** is a right hand elevational view of a first modification of the invention as applied to a revolver;

FIG. **12** is a sectional view taken along the line **12—12** of FIG. **11**;

FIG. **13** is a view taken along the line **13—13** of FIG. **11**;

FIG. **14** is a sectional view taken along the line **14—14** of FIG. **11**;

FIG. **15** is a sectional view taken along the line **15—15** of FIG. **11**;

FIG. **16** is a second modification of the present invention as applied to a revolver;

FIG. **17** is a sectional view taken along the line **17—17** of FIG. **16**;

FIG. **18** is a sectional view taken along the line **18—18** of FIG. **16**;

FIG. **19** is a view taken along the line **19—19** of FIG. **16**;

FIG. **20** is a sectional view taken along the line **20—20** of FIG. **16**;

FIG. **21** is a view taken along the line **21—21** of FIG. **16**;

FIG. **22** is a third modification of the invention as applied to an automatic pistol;

FIG. **23** is a view taken along the line **23—23** of FIG. **22**;

FIG. **24** is a sectional view taken along the line **24—24** of FIG. **22**;

FIG. **25** is a sectional view taken along the line **25—25** of FIG. **22**;

FIG. **26** is a sectional view taken along the line **26—26** of FIG. **22**;

FIG. **27** is a left-hand elevational view of the handle of the automatic pistol;

FIG. **28** is a fourth modification of the invention as applied to another automatic pistol;

FIG. **29** is a rearward elevational view of the automatic pistol of FIG. **28**;

FIG. **30** is a frontal elevational view of the automatic pistol of FIG. **28**;

FIG. **31** is a sectional view taken along the line **31—31** of FIG. **28**;

FIG. **32** is a sectional view taken along the line **32—32** of FIG. **28**;

FIG. **33** is a sectional view taken along the line **33—33** of FIG. **28**;

FIG. **34** is an enlarged view of a portion of FIG. **31**;

FIG. **35** is a left-hand side elevational view of a fifth modification as applied to a revolver;

FIG. **36** is, on its left half, a rearward view of the revolver of FIG. **35** and on its right half a sectional view;

FIG. **37** is a sectional view taken along the line **37—37** of FIG. **36**;

FIG. **38** is a sectional view taken along line **38—38** of FIG. **35**;

FIG. **39** is a partial left-hand side elevational view of a sixth modification as applied to a revolver;

FIG. **40** is a sectional view taken along line **40—40** of FIG. **41**;

FIG. **41** is a rearward elevational view of the revolver of FIG. **39**;

FIG. **42** is a partial elevational left-hand view of the revolver of FIG. **39**;

FIG. **43** is a sectional view taken along line **43—43** of FIG. **42**;

FIG. **44** is a sectional view taken along line **44—44** of FIG. **4I**;

FIG. **45** is a sectional view taken along line **45—45** of FIG. **42**;

FIG. **46** is a left side partial elevational view of the small revolver;

FIG. **47** is a partial left side sectional view of the small revolver;

FIG. **48** is a sectional view taken along line **48—48** of FIG. **47**;

FIG. **49** is a partial right side elevational view of the small revolver grip;

FIG. **50** is an end elevational view of the small revolver handle grip construction;

FIG. **51** is a partial left side elevational view of the small revolver grip;

FIG. **52** is a plan view of the grip constrrction;

FIG. **53** is a bottom view of the grip construction;

FIG. **54** is a sectional view taken along line **54—54** of FIG. **51**;

FIG. **55** is a sectional view taken along line **55—55** of FIG. **49**;

FIG. **56** is a sectional view through grip and handle assembled as shown in FIGS. **57** and **58**;

FIG. **57** is a partial left elevational view of the revolver frame;

FIG. **58** is a sectional view of an integral grip panel;

FIG. **59** is a left elevational view of the left side of the grip panel; and

FIG. **60** is an exploded perspective of the small revolver with the grip panel; panel spine; panel inserts and fastener arrangement.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning to FIGS. **1–3**, revolver **10** includes frame **11**, barrel **12**, cylinder **13**, hammer **14**, trigger **16**, trigger guard **17**, left grip panel **18**, right grip panel **19**, left grip panel insert **21** and right grip panel insert **22**. Also shown are left panel depression area **23** and grip panel fastener **24**.

In FIGS. **4–20**, it is seen that each grip panel **18, 19** is made of an elastomer or otherwise deformable material and sized and shaped including notches **20** to abut along narrow abutment surface **25** and to thereby surround handle frame **26**. Grip panels **18, 19** each has in it a recess **27, 28** respectively. Recesses **27, 28** each extend a substantial distance up and down and a substantial distance across each panel **18, 19** and each recess **27, 28** receives a grip panel inserts **21, 22** respectively. Panel inserts **21, 22** are made of a stiff material such as wood to provide more rigidity and a more pleasing appearance to the handle system which includes handle frame **11**, grip panels **18, 19**, panel inserts **21, 22** and the fastener arrangement **24** to hold them together. The size and shape of the recesses **27, 28** and the inserts **21, 22** housed in them may be varied to control the resilience, stiffness, and appearance of a particular handle system.

Alignment of panel inserts is further controlled by the tolerance between the recess edges *27a, 28a* and the sides of the panel inserts **21, 22**. In addition, alignment of both panels **18, 19** and inserts **21, 22** is aided by alignment recesses holes **30** in the panels **18, 19** and insert openings **31** in the inserts **21, 22** which holes and openings receive stud **32** affixed to handle frame **26** (see FIG. **10**). Stud **32** prevents turning or twisting of the grip elements around fastener arrangement **24**.

Handle frame **26** is preferably substantially smaller than the grip panels **18, 19** permitting substitution of smaller or larger panels as desired. Where larger panels are used which extend below the frame handle **26**, the size and shape of the insert design will permit obtaining the desired flexibility-to-stiffness of the system. For example, a man with a large hand and a strong grip may wish a larger or stiffer insert as compared to a woman with a smaller hand and a less strong grip.

Handle frame **26** and panels **18, 19** are shaped to provide space **33** in front of and behind handle frame **26** (see FIGS. **7, 8**). Hammer strut **34**, hammer spring **36** and spring-loaded trigger guard latch mechanism **37** is also shown (FIG. **8**). Fastener **24** includes bolt **39**, nut **41** and washer **42**.

Turning to FIGS. **11–15**, the second embodiment of the invention includes revolver **40** in which the grip panels **18′, 19′** do not engage but instead are separated by the handle frame **26′**. Further the grip panels **18′, 19′** each include a second inner recess **43, 44** (positioned opposite outer recesses **27′, 28′**) to provide for right and left spaces **46, 47** between the panels **18′, 19′** and the handle frame **26′**. The purpose and function of inserts **21′, 22′**, fasteners **24′** and alignment stud **32′** are the same as in the earlier described embodiment.

With attention to FIGS. **16–21**, the third embodiment is shown adapted for another style of revolver known as the "single action" type. This embodiment shows revolver **50** in which second inner recesses **43′, 44′** are slightly larger than in the earlier second embodiment. Handle frame **26′** includes frame opening **49**. All other aspects of the invention are similar to the second embodiment.

With attention now to FIGS. **22–27**, an automatic pistol **60** is shown with handle **61** including handle frame **62**, flexible grip members **63, 64** and rigid inserts **66, 67**. Fasteners **68** pass through holes **69** in the grip members **63, 64** and through holes **71** and the grip inserts **72, 73** for threaded engagement in threaded holes **74** in grip handle frame **76** to avoid interference with the magazine **77**. Fasteners **68** are recessed in inserts **72, 73**. Also shown is barrel **79**, bolts **80** and **81** handle frame release lever.

Turning to FIGS. **28–34** a fifth embodiment is seen in which pistol **90** carries the same handle grip construction as pistol **70** except the flexible grip panels **81, 82** are secured to grip handle frame **83** by lower fasteners **84** which engage notches **86, 87** in the lower ends of panels **81, 82**, respectively. The handle construction of pistol **80** further differs in that rigid inserts **88, 89** carry tapered end portions **91, 92** which fit into complementary panel notches **93, 94**.

FIGS. **35–38** illustrate another embodiment as shown in which revolver **100** has a handle construction simiar to that illustrated in FIG. **11** in that the new grips extend over the revolver's handle with generally the same external contours as the handle. This basic handle type is used on many kinds of revolvers, and FIGS. **35–38** illustrate that this new grip arrangement is adaptable to many guns, such as those manufactured by Smith and Wesson, Colt, Charter Arms, Llama, Taurus, Rossi and others. Also shown are hammer spring **91** and spring anchor piece **92**.

With respect to Figs. **39–45**, revolver **110** includes grip panels **111, 112**; inserts **113**, II4; grip handle **116** and exposed lower grip handle section **117**. Support pin **118** engages grip panels **111, 112** (see FIG. **43**) Inserted fastener assembly **121** engages panels **111, 112** to urge them toward frame **116** (FIG. **45**). Elastomer element wraps around the rear portion of the grip frame only giving resiliency to that portion and sides only. The front area comprises the grip frame itself.

Finally turning to FIGS. **46–60**, small revolver **120** includes frame **121**, barrel **122**, hammer **123**, grip panels **124** as integrally formed include spine portion **124***a* and lower connector portion **124***b* (FIG. **55**). Also shown are trigger **126**, trigger guard **127**, and grip frame **128**

including rearward frame piece **129***a* with notch **129***b* to form space **129***c* between piece **129***a* and grip panels **124** (FIG. **47**) and forward frame piece **130***a* with notch **130***b* to form space **130***c* between piece **130***a* and grip panels **124**. Spaces **129***c* and **130***c* provide additional flexibility to the handle system.

Right and left panel inserts **131, 132** respectively are positioned in right and left grip panel recesses **133, 134** (FIGS. **48, 60**). Alignment pin **136** passes through grip frame opening **137**; grip panel left and right openings **138***l*, **138***r* (not shown) and the pin ends are nested in insert recesses **131***a*, **132***a* (see FIG. **60**).

The fastener arrangement for urging the grip panels **124** against grip frame **128** and also urging grip panels **131**, **132**, positioned in reoesses **133, 134**, against the grip panels **124** includes bolt **141** with bolt head **142**, head washer **143** and the threaded end nut **144**. By rotating nut **144** to move it toward bolt head **142** panel inserts are moved toward one another compressing flexible grip panels **124**. Bolt **141** passes through right insert bolt hole **131***b*; grip panel holes **146***r*, **146***l* and left insert bolt hole **132***b*.

Also shown in FIGS. **46–60** is grip panel perimeter notch **147** around the upper end of grip panels **124** to mate with the curved grip frame corner profile **148** (see FIGS. **48** and **60**). As seen in FIGS. **57** and **58** grip panels **124** are slidable over grip frame **128** to engage with grip frame **128** with or without stretching or deforming of the elastomer integral grip panels **124**. The grip panels **124** are shaped and configured to include spine portion **124***a*. and lower connection portion **124***b*. Portions **124***a*, **124***b* may be separated, fabricated and positioned with respect to the remainder of the grip panels **124** by gluing or other fastener arrangement.

I claim:

1. In a handgun having a handle including a handle frame, the improvement comprising

(a) an elastomer grip element integrally formed such that grip means are positioned on each side of the handle frame, said grip means including an inside portion engageable with the handle frame and including an outside portion for engagement with the handgun user's hand;

(b) a recess in the outside poriton of each grip means;

(c) a non-deformable externally inserted stiffening element in each recess, the size and shape of the recesses and stiffening elements being variable to accomplish the desired flexibility-to-stiffness of the handgun handle; and

(d) fastener and alignment means for fastening and aligning the grip means, the frame and the stiffening elements.

2. The improvement of claim **1** in which one of said grip means has a second recess in said inside portion with a substantial planar surface which surface is spaced from the handle frame.

3. The improvement of claim **1** in which the handle frame has an opening therein over which the grip means extend.

4. The improvement of claim **1** in which the fastener means includes a threaded fastener which engages each stiffening element, passes through the grip means and engages the handle frame.

5. The improvement of claim **1** in which said grip element includes two grip means and a spine portion integrally formed and shaped to be slidably engaged with the handle frame.

6. The improvement of claim **1** in which the frame carries stabilizing abutment surfaces and in which one of said elastomer grip means has a hole in it and stud means on the handle frame enter into such grip means hole to stabilize the grip means on the handle frame in conjunction with stabilizing abutment surfaces on the handgun handle.

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